THE

# BIOLOGIST

VOL. IX, NO. 2 DECEMBER, 1927

# THE BIOLOGIST

OFFICIAL PUBLICATION OF THE

PHI SIGMA SOCIETY

Volume IX — Denver, Colorado, December, 1927 — Number 2

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# PHI SIGMA SOCIETY

AN ORGANIZATION DEVOTED TO THE PROMOTION OF INTEREST IN RESEARCH IN THE BIOLOGICAL SCIENCES
**founded OHIO STATE UNIVERSITY, March 17, 1915.**

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# THE BIOLOGIST

VOLUME IX DECEMBER, 1927 NO. 1

# Undergraduate Research

By C. I. Reed, Baylor Univ. Medical School, Dallas, Texas.

(Alpha '15)

WITH the great diversity in personnel of the various chapters of Phi Sigma the question of the extent to which undergraduate students may engage in research becomes one of supreme importance. Some chapters admit only graduate students; a second group have both graduate and under-graduates in varying proportions; while a third group, by the very nature of circumstances, is restricted in selection of members almost entirely to undergraduate students. For practical purposes, most students in professional schools may be considered as graduate students although technically, many of them are not.

This diversity of standards has been the cause of some concern at times, but, from several years of observation, I am compelled to conclude that each type of chapter is serving a purpose and accomplishing results for which no apology is needed.

The Constitution states the object of the society to be the promotion of "interest in research". This may at first seem rather vague. However, a careful examination of the facts makes clear that the aim is very definite. Methods of accomplishing this result, however, vary greatly in each institution, and range all the way from facilitation of social contacts among those having common interests to actually engaging in investigation of definite problems.

There are many educators who hold that no one, while an undergraduate, should be allowed to engage in research—at least independently. There is, however, an increasing number of those who hold that research is a method of education in itself. A number of interesting educational experiments have been undertaken in recent years which have as their fundamental idea, education by research almost exclusively, of course under expert guidance and direction.

That such methods may not be successful in any great amount of immediate productivity of knowledge, is granted at once. That they may, however, train students for greater future productivity is strongly indicated. At any rate, the fundamental thesis will have to be disproven by actual trial before the idea will ever be abandoned.

Individual results will depend

largely on the individual students involved. A very bright and ingenious student once indicated his desire to engage in some chemical investigations late in his sophomore year. His instructor at once outlined a long line of courses that must be completed before he could begin independent original investigations. Discouraged at the prospects of four more years of routine work, he set up a laboratory of his own where he began to work on the problems he had in mind. Finally his efforts came to the attention of a somewhat more liberal instructor who at once realized his special capabilities, and succeeded in having his independent work turned in for undergraduate credit and later for graduate credit so that he obtained his doctorate in a little over a year after receiving his baccalaureate degree; and he has since become quite prominent in his special field of research.

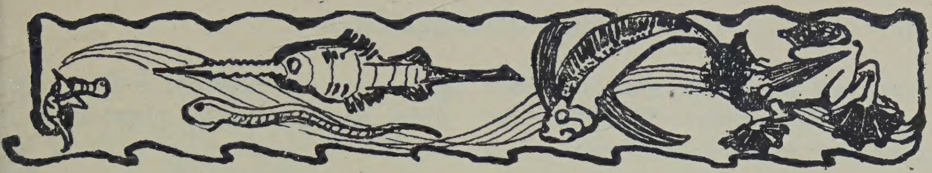
To be sure, this example proves nothing—except that the results depend on the special trend of ability of the individual, granting a certain amount of fundamental information as a foundation. It has been stated that very few outstanding scientists have made their best showing in the particular fields for which they were originally prepared.

On the other hand, scientific literature is littered with reports of research work which is obviously faulty in one respect or another, and it is usually inferred that the fault lies, not in lack of application or conscientious effort, but in lack of certain fundamental information. But here the question arises as to how one may foresee the particular fundamentals that are to be needed in the future. Again we return to the particular ability of the individual.

Summing up then, it appears that no one method of education in sciences is applicable to every student. While a routine procedure may be stipulated before a student is allowed to engage in independent investigation, the way should always be left open for those who do not conform to a pattern but who will acquire by their own efforts the fundamentals necessary for pursuit of their particular interests. After all, the purpose of scientific education is not primarily to produce scientists of any particular kind, but to produce results in the form of scientific knowledge. If results can be produced without a routine procedure, then there is no justification for an inflexible routine requirement.

Phi Sigma can accomplish a great deal in discovering students with special ability for research; so the society should always open membership to those who show aptitude and interest without too much stress on routine qualifications. Consequently, the present liberal attitude of leaving each chapter free to meet the conditions in its own habitat is more likely to produce maximum results than the adoption of a fixed standard to be rigidly applied to every chapter. There is no justification for the idea that the society is interested

*(Continued on page 8)*



# Undergraduate Research and Phi Sigma

By Everett F. Davis, Asst. Plant Physiologist, Agr. Exp. Sta.,
Blacksburg, Virginia.

(Mu '23)

VERY recently it has been noticed that delegates reporting from two of our oldest chapters upon the convention floor have read from their reports as follows: ". X . . chapter has only . . Y . . active members. This is a small number but it is the result of an attempt to carry out the *main purpose of Phi Sigma,* — undergraduate research." Again, from another source which is equally as old and equally as well informed in the traditions of Phi Sigma, "The reason that research work is being done only by faculty and graduate students is that the university has not had sufficient funds to enable it to give the work to the undergraduates. Negotiations are now under way to increase appropriations ......etc......... If this is done, it will mean a larger faculty and enlarged facilities and will give our undergraduates opportunities not heretofore available".

Mistakes will happen. If this is only a slip of the tongue, it is a regrettable one if allowed to go into our records without comment. New chapters are open to conviction, and should they receive the impression that our chief aim is undergraduate research it would spread through the remaining chapters very quickly.

Now, it should be questioned very earnestly whether or not Phi Sigma stands for or against undergraduate research. The preamble to our constitution does not help us to decide. It reads as follows:

"PREAMBLE

"Recognizing the necessity of and the mutual benefit to be derived from an organization devoted to research in biological sciences, and from a careful investigation into and a free discussion of the same:

"We agree, therefore, to form an association, and for its government to adopt the following Constitution and By-Laws:

"Article 1.—Name and Object."... This does not decide the question for us, for in section 2, referring to our object, it is stated, "The object of this society shall be devoted to the promotion of interest in research in the biological sciences". Notice the word *interest.* It is evident that our founders wished to avoid mentioning any other references to their opinions on the objects of Phi Sigma.

May not the society confine its efforts well within the limits expressed by our constitution? Should we not take due precautions to prevent a misconception from gaining further ground? Until it is decided whether undergraduate research is feasible from the advanced pedagogical views of our day, we should content ourselves by encouraging a *spirit,* a desire for research among our undergraduates.

Our position, as a society composed of both graduate and undergraduate students, is a difficult one, which is rendered even more complicated in many localities by the fact that we have chapters whose active membership is chiefly, if not entirely, composed of undergraduates. However, in such chapters, the necessity of a *spirit* for original investigation need be none the less emphasized for each and every member, because of this situation.

What are some of the different means which we may employ for fostering this spirit? One project which falls in line with the aims of our society comes to mind and suggests a very useful and important service by which a wholesome research spirit may be created. Cannot the faculties in the biological sciences be persuaded by Phi Sigma chapters to present outlines of their researches which are in progress of completion during the course of their lectures to undergraduates? These may be illustrated and augmented by remarks and prepared lantern slides, or, better still, by showing results in the actual material in which they occur, whether it be results from microscopic sections, or slides, or experimental plats, or, as a result of a fertile mind, a bit of ingeniously devised mechanism useful in biological studies.

This, it seems, would give undergraduates an opportunity to see biological materials as their professors see them—from the standpoint of research. Whether consciously or subconsciously, impressions would be formed which would grow and develop in young and tender minds, whether favorable or unfavorable such impressions might lead students to the view of taking advanced work as graduate students whether in biology or in some other field in which he or she is better suited and prepared.

From all that has been said, we can gather that it is the *spirit* which should permeate every biology department, and it is the *spirit,* which is of chief concern to Phi Sigma and not how much research has actually been accomplished during our undergraduate days.

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## Undergraduate Research

*(Continued from page 6)*

only in undergraduate research, any more than there is for the development of a purely graduate society. It is a medium of expression for the immature biologist; and as such, each chapter must apply its efforts to the local problems peculiar to the conditions under which it exists, and to the particular brand of raw material available in the student body.

## Noted Botanist Leaves Iota Chapter to Affiliate With Zeta

Doctor B. M. Duggar, retiring vice-president of Section G. A.A.A.S. and author of standard text books in the field of Plant Physiology and Phytopathology, has accepted a professorship on the university staff at Madison, Wisconsin. Dr. Duggar will be concerned chiefly with experimental studies in the field of Plant Behavior and Pathology.

Dr. Duggar married Miss Elsie Rist of St. Louis during the early part of last June, after which they spent the remaining portion of the summer in Woods Hole, Massachusetts. While there, Dr. Duggar affiliated himself with the Marine Biological Laboratory where he carried on experimental work.

Zeta chapter is indeed fortunate in having a man who has upon every occasion mingled so whole-heartedly with the spirit of social fellowship which exists among the members of Phi Sigma on the campus at Washington University, St. Louis.

## Third Race Betterment Conference Called by Univ. of Michigan's Head

Preliminary announcements of the Third Race Betterment Conference, the first to be held since the war, has been made by Doctor C. C. Little, Delta ('23), Pres. of the Univ. of Michigan, who heads the conference committee.

The two-fold object of the coming conference, which will be held at Battle Creek, Mich., from Jan. 2-6, is first, to assemble the facts of race degeneracy and also of recent scientific progress dealing with the prolongation of human life, and second, to give a greater impetus to the dissemination of these facts for the benefit of humanity. Special group sessions will be given over to reports of recent progress in the fields of bacteriology, medicine, nutrition, eugenics, physiology, and education.

## Former President Setchell Returns From a Round World Biological Survey

After fifteen months of continuous travel and scientific exploration, Doctor and Mrs. W. A. Setchell from Berkeley, California, landed in New York harbor, last August.

With three months in the Tonga Islands, where the land and marine flora, and particularly the coral reefs were studied, they proceeded to Japan where they represented the University of California at the meetings of the Pan-Pacific Congress at Tokyo, last December. Their next stay was in Java, at the Buitenzorg Botanical Garden. From Java, Australia was visited and collections were made in the region of the Blue Mountains of New South Wales. They became acquainted with the subantarctic vegetation of New Zealand, the marine and land flora of South Africa, south of Victoria Falls and the Zambesi river. Leaving Africa from Beira, on the east coast, they traversed Europe to London, hence to New York.

## Dr. Bruce Fink of Miami University Dies in His Laboratory

Dr. Bruce Fink, head of the Department of Botany at Miami University since 1906, died suddenly in his laboratory on the morning of July 10, 1927. A sudden attack of heart trouble was given by his physician as the cause of his death.

Dr. Fink was sixty-five years of age. He was graduated from the University of Illinois with the B.S. degree in 1897; he received the A.M. degree from Harvard in 1896, and the Ph.D. from the University of Minnesota in 1899. He was professor of Botany at Upper Iowa University in 1902-03, at Grinnel College in 1903-06, and at Miami University from 1906 until the time of his death.

Dr. Fink was the leading American authority on lichens and one of the two most eminent lichenologists in the world. At the time of his death he was working on a comprehensive manual of the lichens of America. It is the purpose of his family and of the University to see that this work is completed and published in his name. Miss Joyce Hedrick, a member of Phi Sigma, who was his assistant is at present working toward the completion of this manual.

He was an excellent teacher and sent many students to the graduate schools. As a teacher he was a man of most generous spirit, of the highest ideals, and held great human interest in his students.

He was an active member of many national scientific societies, including Phi Sigma, Sigma Xi, American Association for the Advancement of Science, American Botanical Society, Ohio Academy of Science. He was associate editor of Mycologia, and the author of various papers and books. He took an active part in voluntary organizations for the welfare of the students, his church, and his community.

The following has been added as a quotation from Science N.S. LXVI No. 1719, p. 554, 1927, where a more complete memorial of Professor Fink is given:

"His productive work as a scientist is indicated by the long list of titles of his publications—more than one hundred, mainly related to lichens. During his study of these plants he amassed a large collection of some 15,000 specimens, one of the most complete in this country."

### Seems Reasonable

The Patient—Doctor, I snore so loudly I wake myself up!

The Doctor—That is easy to overcome. Sleep in the next room.

—*Le Pele-Mele, Paris.*

# THE BIOLOGIST

OFFICIAL PUBLICATION, PHI SIGMA SOCIETY
PUBLISHED TWICE YEARLY, IN DECEMBER AND MARCH

Editorial and Business Office
Missouri Botanical Garden, St. Louis, Mo.

*Editor and Manager*
EVERETT F. DAVIS

## Editorials

### Phi Sigma and Song

IT IS gratifying indeed to notice that rarely an edition of THE BIOLOGIST comes from the press without some space devoted to the social side of Phi Sigma. Certain chapters have made a name for themselves through the songs they sing and others by stressing out-door activities; hikes, collecting trips, clam bakes, steak fries, cabob roasts, etc. Some have gone so far as to initiate new members informally in the open, all of which program is usually followed by a campfire meeting. In all such places good fellowship is usually expressed in song.

What are some of the songs we sing? A few of them appear in this issue of THE BIOLOGIST. The songs are as varied from each other as the tunes that are sung. Many are the old refrains,

"In the moon light you can hear those darkies singing—",

"Sleep, my little one, Sleep my pretty one Sleep", and by way of contrast we sing to the tune of,

"My name is Sol-o-mon Levi—",

"We'll was-n't No-ah a might-y man, To build his house on de sand-y lan'?—". However, the biologist invariably expresses the inner surgings of his soul and so he bursts into refrains like these,

"The lightning-bug is a funny bug; he doesn't know his mind;
He flies about dis world of ours with his headlight on behind",

"The centipede must hate to walk, for when he moves around
He has to move a hundred feet and place them on the ground."

"Drosophila, Drosophila,

Enshrined within thy lastic
jar—",

"There was a simple Arthropod,
Upon the summer sea;
They caught him in the lobster pot
And brought him back to me—".

The latest one, however, if I recall to mind correctly, runs like this,

"Sit together, listen together,
Sing together, eat together,
and you'll work together."

And this one, too, which is *The Phi Sigma Boast*,

"We eat hot dogs, we spurn egg
nogs,
We grow good grain and feed fat
hogs,
And now and then we slice up
frogs,
With war paint on and fighting
togs,
We're a big bad bunch of biologs.
Yea! Phi Sigma.
Yea! Phi Sigma."

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## The Tripotage

*The Tripotage* has come to use to stay. Let's hear from a few of our friends concerning ourselves — here goes.

*Forrest N. Anderson, Kappa* '23, writes a newsy letter.

It dawns on me that it is high time I forward that dollar for the subscription to THE BIOLOGIST — 1927-28.

Although I have no Phi Sigma connections here at Univ. of Penn. I try to maintain a contact with the society at large. And THE BIOLOGIST is a "sine qua non". Hence, I always appreciate the issues.

I am entering my third and final year in Neuropsychiatry at the U. of Pa., after which I expect to be back nearer my home chapter, Kappa. Then I trust we may meet some time soon. It would be a great pleasure to make your personal acquaintance. Meanwhile, all good wishes to yourself and Phi Sigma activities.

Fraternally,
FORREST N. ANDERSON.

Doesn't sound as if marriage makes him blue, does he?

*George Banta,* editor-in-chief of BANTA'S GREEK EXCHANGE, wrote to the editor not long ago as follows:

My own individual interest aside from the fraternity feature is that, while not in the least a scientist, my private side reading has all my life been on scientific matters. Consequently, I find great value in such magazines as THE BIOLOGIST. When you add to it the fact that I am editor of a fraternity magazine, you have a combination which makes your journal valuable to me.

It was very generous of Mr. Banta to say that, wasn't it?

*Francis D. Murnaghan,* who is the assistant secretary for the American Association for the Advancement of Science, says:

We are very interested in reading your letter of March 24, telling us about the progress in connection with your magazine, THE BIOLOGIST, and we were glad to know that it is such a successful magazine. Small magazines of this character circulating among young scientists interested more or less in the same manner are, no doubt, very influential for the progress of scientific research. We shall be glad to receive copies of THE BIOLOGIST from you for our files of publications by our associated and affiliated societies.

---

How do you like this one?

## Woes of the Business Man

WILL they never let up? Every mail is freighted with them. The Uplifters, of course, lead the procession. They send you reams of stuff bearing the glad tidings that a brand new society has just formed to remove all the bunions of wickedness from the painful pink toes of the prenatal curse. Societies to make men and lovely ladies good and dry and societies to make the sons and daughters of hellions painfully bad and oppressively wet all thunder in the mail's index. Better babies and prettier pigs, short cuts to wealth just so you can stay out of jail, devious ducks whereby you can do as you please and not have a headache over it the next morning. There are societies to save everything from the cat to civilization that send out hurry up orders for you to get on the band wagon while the getting is good. The plight of the downtrodden Armenian is still breaking the heart of the world. The heart of the Indian widow does not sing with joy; and won't you please heed the Macedonian cry and send a check across the mountain to make all as it should be. We give to Community funds until we feel the exquisite joy of its hurting like hell and the next day there are forty more prayers for more relief of the deplorable conditions you thought you had relieved.

But perhaps the worst offenders are the high brow societies that are being created to card index humanity. How they find time to create them all God only knows. Some of them would plumb your emotions and all of them your pocketbook. They send you questionnaires to fill out. They want to know everything from how you felt at your grandmother's funeral and the first time you noticed a cutie's pretty leg. They want to know your religion and if you have none how you lost it. They want to know how much you make and how you spend it and what you are going to do with the rest. They want to know whether you are a blonde Nordic or an humble brother in black, yellow or tan, and how far toward the hundred per cent goal you kick the beam. We have tried to formulate a stock answer and cannot. In fact, we have never seen but one answer which struck us as artistic and at the same time adequate. Over in Pennsylvania an intelligent but peevish lady got one of these questionnaires. Here are the questions and answers:

Question: How old are you?
Answer: Ask the neighbors.

Question: Does your husband support more than one family?

Answer: I think not, but better ask him.

Question: How many in your family?

Answer: Five. Me, the old man, one kid, a cow and a cat.

Question: What are the family's politics?

Answer: I'm a republican, the old man a democrat, the kid is a wet, the cow is dry and the cat is a populist. —*Akron Beacon Journal.*

## Research Declared Greatest Aid to the American Farmer

William M. Jardine, Secretary Agriculture, stated before a group of chemists gathered at Yale University, New Haven, Connecticut, on March 28, "The agriculture of the future will be successful in proportion to the extent to which it is shaped and guided by the basic facts revealed by scientific research".

## High Honor Paid to Vice-President Keefe

Reverend Doctor Anselm M. Keefe, vice-president of our society, has been honored by the president and trustees of St. Norbert College, West De Pere, Wisconsin, in that he has been installed as Rector of the college. The installation took place Tuesday afternoon, December 20, at the College Auditorium.

Doctor Keefe carries with him the very best wishes of his chapter, Zeta, and the hearty congratulation of the entire society. Those who have been fortunate enough to make his acquaintance at one or more Phi Sigma conventions are confident that success will characterize his endeavors in this responsible position.

## Bugs

(Tune—Smiles)

There are bugs that make us happy,
There are bugs that make us sore,
There are bugs that spoil our dispositions
Till we never want to see them more.
There are bugs so very complicated,
That their heads from tails we cannot tell—
But the bugs that fill our hearts with sunshine,
Are the big bugs of Phi Sigma.

—*Woods Hole*

## Phi Sigma Times

(Tune—Tucky Home)

Phi Sigma times are the times for you and me
Everywhere Phi Sigma goes from mountain top to sea
Just watch the smoke from our campfires bright
Oh we'll stay there, and we'll play there
All the day and all the night.
We should worry how we look,
We can hike and we can cook
We can beat most any book
When we all discuss
So—————
Just get the moon and the feed
And the bus and you'll hear
That, cheer that,
Phi Sigma gang with us.

—*Phi 1927.*

# A Preliminary Report on the Progress and Encouragement of Science Instruction in American Colleges and Universities

A PRELIMINARY survey report on the progress and encouragement of science instruction in thirty-seven American colleges and universities from all sections of the country for a period of ten years, 1912-1922, brings out an interesting development for several pure and applied sciences with respect to size of their enrollment as compared with that for the university in its entirety. The author*, Dr. N. M. Grier of Dartmouth College, a Phi Sigma member of long standing, indicates by using graphs that the influence of the war fell somewhat more strongly to the aid of some sciences, particularly the botanical sciences including agriculture, chemistry, and physics than it did to others. The increases in the percentages of students enrolled in chemistry and physics during the years of the war can easily be explained by their wide application to meet the daily necessities of the nation under the stress of war. Likewise, applied botany was aided materially by the necessity for increased food production.

Physiology and Hygiene also had their largest innings during the period of the war, being stimulated perhaps by the need for military hygiene. Four of the women's colleges showed an increased percentage, two decreases, and one no change. Zoology, geology, and astronomy enrollments, on the other hand, suffered during the war period.

Considering the whole of biology, in which we are particularly concerned, let us trace certain tendencies which are mentioned in this paper which have manifested themselves in bringing about transitional changes.

## GENERAL BIOLOGY

We are told that general biology shows the greatest variation in subject material of any of the collegiate courses in beginning science. The author states that this may have to do directly with the fact that it has been subjected to a severe attack on the part of the biologists themselves. ''On the other hand, the variation in the types of the course referred to, may indicate a keen appreciation of the possibilities of this composite science. There is surely much to be said in favor of a subject which views all life in unity, bringing out its various phases by comparison and contrast. It seems well adapted to the single year of study most students give it in college, if the content is such as to avoid so far as is possible subject matter which the student may have previously had.''

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* Grier, N. M. ('26). A Preliminary Report on the Progress and Encouragement of Science Instruction in American Colleges and Universities. School Science and Mathematics 26: 753-64; 872-81; 931-40: 1926.

### ALL BOTANICAL SCIENCES

The data from the questionnaires seems to suggest a rise in southern institutions and a decrease in the northern schools which is especially evident among the New England men's colleges. Further indications from the graphs are that as a general thing, botany has been in the process of decline during the ten years of study, but at present may be on the upward trend. The admixture of agricultural students introduces an element of confusion which may be partly offset by the fact that there is a downward trend in the number of students taking agriculture over the entire country.

### GENERAL PHYSIOLOGY AND HYGIENE

The small number of institutions reporting courses in this subject may indicate that it is gradually passing from the college curriculum. The practical hygiene phase of it may best be cared for by the department of physical education and hence not included in the reports from the questionnaire. No doubt the health conservation activities inaugurated by the public schools is taking the place of it on the college curriculum.

### ALL ZOOLOGICAL SCIENCES

Among the institutions reporting on this subject, there is a gain in the northern, western, and southern institutions, with all the losses in the New England men's and co-educational colleges. The peak of enrollment was attained in the year 1915-16, a circumstance which the author ascribed to the fact that ''During the next two years, war time conditions largely curtailed biological instruction. The introduction of a prerequisite year of general biology may militate against students electing advanced zoological subjects, which after all, mostly attract pre-professional students of one type or another.''

### ALL BIOLOGY

Of twenty-four institutions reporting full data and partial data from eleven more, sixteen showed increase in the enrollment in biological sciences, eighteen others decreases, while one institution had no change. Five of the women's colleges showed an increase and five a decrease, three of the latter were found in New England. Two of the three southern women's colleges showed an increase in enrollment. ''Institutions gaining are in order, the northern institutions, the New England men's and co-educational colleges, the western institutions. There is a distinct loss in New England women's colleges, while gains among the New England men's colleges.''

The peak years for the biological subjects were during the war, but since that period the enrollment has steadily fallen off. The author emphasizes the fact that these losses seem to occur in the advanced divisions of the subject, which attract only those students who are preparing for medicine, teaching, forestry, agriculture, or other professions in which biology is a basic science. "Other students seem to prefer the constantly growing semi-biological, non-laboratory social sciences which include the direct application of elementary biological concepts to the affairs of man. Biologists are appearing to make some effort to combat this situation by the formulation of new types of courses, many of them of a non-laboratory or field type."

The author concludes his remarks under this topic by stating, "It should be a matter of greater concern to biologists at large, that their science does not show a healthier growth."

There are other problems considered in this paper which do not come within the scope of the present review. This paper contains much to commend it, but the sets of data relative to each branch of science show variations in some instances as small as six parts in two hundred and fifty, or 2.2 per cent, and in only one single instance was the variation as great as ten parts in one hundred and fifty or 6.6 per cent. When differences of this magnitude are combined with so few cases (the number of colleges and universities reporting from any one section of the country being no larger than eleven) it becomes a dangerous thing to draw many general and far-reaching conclusions.

It is stated in the author's conclusions, "It apparently follows from the preceding that the first year of biological, chemical and physical science is becoming increasingly popular with students, but for some reason within or without their control, these departments fail to hold students for advanced work in them." It has occurred to the reader that the popularity of the first year courses may be only apparent, not real, in view of the fact that in many universities and possibly in some of those from which the author has himself collected data, students in liberal art courses are now required to take one if not two different science courses before they can graduate with the A.B. degree. These courses are usually taken during the first and second years. Since a student who is compelled to take a course may not be one especially interested in it, is it to be wondered that so few students who take a required science remain in the department to do more advanced work?

It is to be conceded with the author of this paper that college and university administrators should preserve such useful data as this as nearly complete and accessible as possible. Attempts should be made to standardize the procedure in this particular among college accountants.

—Abstracted by E. F. Davis, Mu '23.

# BETA

## Vice President Keefe Visits Chapter

## Discusses Phi Sigma Aims

By B. D. Thuma

IN the May issue of The Biologist my predecessor, Mr. Carl Huber, and his collaborators so ably covered the biological side of our institution and the work of the members of Beta Chapter that there is little that I may add of interest in that line. Rather shall I summarize briefly the progress of the chapter this past semester with regard to its more strictly business affairs and policies.

In order "to promote interest in research in the biological sciences", it has been the policy of Beta Chapter to have the members and representatives of the faculty give short informal talks on their work. Ordinarily it has been the practice to have one talk each meeting, the students alternating with the member of the faculty, but this program is elastic and often varied to suit the circumstances. During the past year we had two talks in one evening on several occasions, and reserved other meetings strictly for business transactions. Throughout the past semester the program of papers presented was approximately as follows. Professor Karl Guthe spoke on his anthropological expedition to the Philippines. Mr. Paul Moody gave a paper on the brightness of vision in deer mice. Mr. R. U. Light gave a demonstration of the uses of the substandard size motion picture camera in research in physiology, while Mr. T. C. Schneirla told us of his study involving the ability of ants to learn a maze. At the second meeting of the present semester, Mr. W. F. Nungester spoke on dissociation in Bacillus anthracis. These papers are, in most cases, reports of research in which the speaker is engaged at present.

At this last meeting we were very fortunate in having as a visitor Father Keefe, our national vice president, who gave us a short informal talk on the aims and policies of Phi Sigma. Needless to say, we were all very much delighted at Father Keefe's visit, and those of us who had not chanced to make his acquaintance previously were more than happy to have had the opportunity of meeting so charming a gentleman and so thoroughly a good fellow.

At the spring initiation we initiated into the chapter the following men: Mr. L. G. Barth, zoology; Mr. J. W. Bean, physiology; Mr. T. G. Bernthal, medicine; Mr. E. P. Creaser, zoology; Mr. F. A. Johnston, medicine; Mr. R. E. Larson, dentistry; Mr. H. F. Mattson, medicine; Mr. C. Melichar, forestry; Mr. H. E. Ochsner, forestry; Mr. W. M. Sams, medicine; and Mr. F. P. Strushaker, forestry. In addition to these men our roll has further been increased by the following transfers: Mr. Leonard Ekvall from Xi Chapter, and Mr. Delbert Schwartz from Theta Chapter.

In this election, as in earlier ones, quite a bit of discussion revolved about a point which I think may be of interest to other chapters. This is with regard to the definition of the term "research". It has been our experience that the term as used in the national constitution is not defined with sufficient strictness, and, as a result, it is impossible to differentiate sharply between those who are doing acceptable research and those who are not. Thus, overzealous sponsors for some prospective member whose research qualifications may not be so obvious, may interpret the term broadly enough to effect the election of their protege. As a consequence, if a chapter is not held to some very definite eligibility program written into their local constitution, elastic interpretations of the term 'research' will, if frequent enough, inevitably defeat the purpose of Phi Sigma as a definitely research organization. Here we regard research in the sense that it is experimental investigation which has for its object the contributing to the sum total of our knowledge in the biological sciences. We have not yet found a solution to this situation acceptable to all, and we should appreciate very much learning how other chapters may handle the case. It is to be earnestly hoped that at the coming convention at Nashville some action will be taken upon this point and the eligibility program be made in every respect as definite and as unambiguous as possible.

*Read The Biologist*

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## DELTA

### Biology Department at Maine Completely Reorganized

DELMAR B. LOVEJOY

ON October 6, 1927, our small number of nine active members assembled for our first meeting. We lost a large number of active members who graduated in June, 1927; therefore, we got busy at once on the matter of selecting new candidates for membership. All our sisters graduated last spring, and we were able to find only one co-ed eligible this fall. It seems to be our duty to influence more girls to "major" in Biology.

The Biology department at Maine has been completely reorganized.

Dr. William H. Eyster received the Guggenheim Fellowship and is now studying in Germany. Dr. Chas. H. Batchelder is doing research work in the United States Department of Agriculture. Dr. Woodward is conducting research at the University of Michigan; Dr. Whiting is with the Bussey Institute, Jamaica Plain, Mass., and Mrs. Whiting is at Catauba College, N. C. New members of the Biology Department are: Dr. Donnell B. Young, chairman of the department; Dr. F. H. Steinmetz, Botanist and head of Botany Department; and Dr. Kenneth L. Rice, animal Physiologist.

Due to the fact that several of our active members are senior foresters and, as part of their course, must spend three months in the "big woods", we elected a temporary president, Mr. Bell, who will act in place of president Alan Goodspeed while the latter is surveying three or four counties in northern Maine.

Our alumni members, who graduated last spring are now scattered widely over the surface of the earth.

Miss Edith Merchant is doing research work at the Maine Experiment Station.

Former Secretary, Miss Orne, is teaching biological subjects in a Maine high school.

A step farther away, Miss Elizabeth Sawyer, is an assistant to Dr. C. C. Little, at the University of Michigan.

Miss Annette Mathews is doing pathological work in Eastern Maine General Hospital at Bangor, Maine.

Miss Ruth Hitchings is teaching with Miss Ruth Crockett, in Smyrna.

*Read The Biologist*

## EPSILON

### Epsilon Absorbs Beta Omega Pi

WHEN Epsilon chapter was installed at the University of Denver in 1917 it was the men who showed the greater interest in such an organization, and hence it was established as a society for men only. In November, 1924, the women organized a separate society, similar to Phi Sigma in purpose, aim, and requirements, and adapted the name Beta Omega Pi. Meetings were held once each month, at which time papers were read by members of the organization or an outside speaker presented some phase of her work.

Recently it was believed that mutual benefit could be derived if these organizations be combined, and on January 19th, 1927, Epsilon incorporated Beta Omega Pi into its ranks. The advantages of such a merger are obvious. First, the membership is considerably increased and the added strength is felt by each. Second, it opens a larger range from which prospective members can be chosen and thereby greater discrimination according to ability becomes possible. Third, it removes an ever-present jealousy which exists wherever one organization cannot choose its members for their merit only but must discriminate according to sex as well.

With such a stimulus the greater Epsilon started the previous year.

### Members of Epsilon Prominent In Archaeology

SEVERAL of the members of Epsilon Chapter have attained considerable prominence recently in work in Archaeology.

Dr. Etienne B. Renaud (Epsilon 1917) has added several articles to his already long list of publications. All are based on Dr. Renaud's own researches on materials recently collected in the Southwest. In Physical Anthropology Dr. Renaud has directed his attentions to head measurements of various ancient Indian tribes, and has worked out some very interesting information in regard to sexual differences. This is discussed in an article entitled: "Sexual Differences in Skull and Face Measurements of Some Prehistoric Indians of the Southwest." This paper was read at the Science Section of the Colorado Education Association, at Boulder, Colorado.

In General Archaeology Dr. Renaud has prepared several articles. At the meeting of the Southwest Division of American Association for Advancement of Science at Santa Fe he presented a paper entitled, "Temper of Prehistoric Indian Pottery." In addition there have recently been published in Paris the following: "Prehistoric Indian Figurines From Arizona," and "Prehistoric Flutes From Arizona."

A very interesting and new field of work is that being done in South Africa. Very little has as yet been published in regard to the prehistoric peoples of this continent. At present a volume of such South African Studies is being prepared for which Dr. Renaud is contributing the following chapters: "Prehistoric Anthropology of South Africa," "The Stone Age of South Africa," and "Prehistoric Ruins of South Rhodesia."

"Indians of Colorado" is the contribution he has made to a series of short studies published this Fall by the University of Colorado, the occasion being the fiftieth year of her foundation.

Frank Roberts (Epsilon 1923) is now Archaeologist for the Smithsonian Institute, Bureau of American Ethnology at Washington. Mr. Roberts has considerable experience in field work, and the past three summers he spent in Chaco Canyon, New Mexico. The large amount of material obtained from these excavations constitutes the material on which he is doing his original research. At present he is preparing a thesis for his Doctor's Degree which he is about to receive from Harvard. His subject is, "Chronology of Pottery of Chaco Canyon."

Henry Roberts (Epsilon 1924) is turning out to be as able an archaeologist as his brother Frank. Henry is Assistant Archaeologist for work at present being done in Yucatan. This work is under the auspices of the Carnegie Institute at Washington, and excavations are being made at Chichen Itza. The director of this expedition is Mr. Morley, and Earl Morris is the chief archaeologist. Last summer he again worked in the Chaco Canyon with the National Geographic Expedition.

Dolores Calahan (Epsilon 1927) has accepted the position as Secretary to Mr. Neil Judd, who is Curator of American Archaeology at the United States National Museum. Her work at present locates her at Washington, where her chief occupation is to catalogue and classify the material obtained in the field the summer previous, and also to help prepare the report of this work. This gave her opportunity for research in the Smithsonian Library and Congress Library, and unequaled opportunity to prepare herself for the expedition to Chaco Canyon last summer. In this field work Miss Calahan has had the distinction of being the only woman who ever qualified for such a position. The work was under the leadership of Mr. N. Judd, and is conducted under the auspices of the National Geographic Society. Here Miss Calahan also acted as Secretary, thus giving her direct knowledge of every phase of work done by the entire party.

Llewellyn T. Evans (Epsilon 1923) was chosen by Dr. Jean A. Jeancon, Curator of State Museum, Colorado, to assist in his party which left for the Indian Territories of the Southwest on an Ethnological Expedition last summer. The purpose of this expedition was to collect baskets and pottery made by the Indians of the various tribes of New Mexico and Arizona. Over three thousand miles were covered during the trip and a great many valuable baskets and Indian pots were bought for the Museum. No prehistoric baskets or pottery were obtained, the object of the expedition being only to recover some truly representative examples of pottery design and basketry made by the different tribes during the past fifty or seventy-five years. The third member of the party was the Director of the Denver Art Museum, Mr. Edgar C. McMechen, and he collected a number of valuable pieces of pottery for the Denver Art Museum.

Surprising as it may seem, in quite a number of cases it was found possible to buy baskets and pottery cheaper from governmental agents or from stores than from the Indians direct. In not a few places it was found that the Indians were making articles of pottery in imitation of the white man's dishes and other household utensils, the tourists often having no appreciation for the typical Indian objects. Therefore it took but a short time for them to make familiar objects for the tourist trade.

Among the countless interesting things visited on the trip were two Indian dances; one held at Cochiti Pueblo, near Santa Fe was the Corn Dance, held in Honor of the Rain-God, for rain was needed in order that the corn crop might mature. The other dance, the Neman-Katoina of the Hopi Indians at the very primitive village of Walpé in the Hopi Reservation in Northeast Arizona was also held in honor of the Rain-God.

Mr. Evans has recently been appointed Instructor of Biology at Robert College in Constantinople, Turkey, for a three year term. While there he hopes to continue the work so admirably begun by the Russian Professor there, which includes making the first collection of marine life of the Sea of Marmora, Black Sea, and the Dardenelles. This presents an excellent opportunity for some original research. From a letter recently received we learn he has started his work with great enthusiasm, and we wish him all the success which we know will be forthcoming to one of his ability and interest. Robert College is under the direct control of, and is an integral part of the University of the State of New York, having been founded in 1863.

Alfred M. Bailey (Epsilon 1924), curator at the Denver Museum, is at present in Central Africa, having been appointed as a member of the party sent on this expedition by the Field Museum of Chicago.

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## Report of Work on Intelligence and Learning by Members of Epsilon

DR. THOMAS R. GARTH (Epsilon 1923) has continued his researches, and several articles have recently been added to his publications in Psychology and Education. For some time Dr. Garth has been measuring the intelligence of various Indians. These tests revealed that the mixed blood Indian was somewhat more intelligent than the average full blood Indian, whereas in mental fatigue the Plains Indians were able to hold out better than the Plateau Indians and the mixed blood Indians, and even better than the whites or negroes. At the recent meeting of the American Psychological Association held at Philadelphia, Dr. Garth read the paper entitled, "Intelligence of Mixed Blood Indians." At the meeting of the American Anthropological Association he read a paper on "Will-Temperament of Full Blood Indians." The study which has thus been begun is being continued, as it affords a field for research quite unique in opportunity and results. At present some attempt is also being made to measure their musical ability.

Dr. Garth is undertaking a similar study of the Mexican, and has recently published an article on this work entitled, "Psychology of the Immigrant Mexican." Here he shows that while far from complete, tests seem to show that the intelligence of the Mexican is at least not below that of some other foreign-born men, for instance, Greek, Russian and Italian.

"The Learning Curve of the Land Snail" has been published, and this work has the distinction of being the only one of its kind. The curve of an aquatic snail has been plotted, but this is the first attempt to measure the rate of learning of a terrestrial form.

Robert Thomas (Epsilon 1925). Does a Will-Temperament Test have any prognostic value, and does it indicate proficiency or lack of it in the teaching profession? That is the question Mr. Thompson is attempting to answer at present. At a recent meeting of Phi Sigma he gave a report of his work to date, and his results were pronounced most interesting and promising.

Granville B. Johnson (Epsilon 1923) read a paper before the American Psychological Association at Philadelphia entitled, "Sex Differences in Learning to Walk the Tight Wire." Mr. Johnson is Director of Physical Education at the University of Denver, thus giving him ample opportunity to observe differences in rates of learning. Apparently the men learned to walk more readily than the women. The reason for this affords opportunity for psychological study. He is continuing his observations.

George A. Dale (Epsilon 1920) is at present engaged in raising white mice, which he will use for experiments on the female sex hormone. His problem is to determine the influence which the sex hormone has on the learning process, after he shall have injected it into the animal.

Work on the chemistry of the female sex hormone is being continued by Dr. Reubon G. Gustavson (Epsilon 1925) and by Hugo Krueger (Epsilon 1925). Recently Mr. Krueger has accepted the position of Instructor in Chemistry at the University of Michigan. Here he has started research on some phases of Brain Respiration.

## The Rocky Mountain Biological Station

THE Rocky Mountain Biological Station is one of the activities of the members of Epsilon Chapter. The work here is sponsored by the University of Denver and Dr. S. M. Coulter (Epsilon 1921) is the Director. Dr. Coulter has charge of the Botanical work given here and Professor Humphrey G. Owen (Epsilon 1917) has had charge of the work in Zoology.

The Station is situated about five miles above Estes village, and offers unusual advantages for the study of alpine and subalpine life. Most of the work is done at an altitude of 8,500 feet, yet is within easy access to altitudes much higher. Thus, within comparatively short distances one traverses a great number of associations, and various stages in plant succession can be observed. The region chosen is unique for the combination of altitude, temperature, rainfall, slope, exposure, and evaporation, and constant records of all such facts are maintained at the Station. Careful study is also made of the soil, its physical and chemical properties, including its Hydrogen-ion concentration. The Colorado mountains are exceptionally rich in flowers at this time of year, and several nearby lakes as well as numerous streams make a study of aquatic forms possible. No region could offer greater opportunity for a study of lichens. The Algae, the Fungi, and also the Bryophytes and Pteridophytes found in an otherwise Xerophytic region have been made problems of research meeting with unusual success. Phases of soil science are always available for study, especially when combined with a geological background of these mountains.

Thus, the Station offers unusual optunity for study directly in the field, as well as providing an outing to so fascinating a region. This summer work will begin here again, about the first of August, and will be continued in the field for four weeks.

## ZETA

### Wisconsin Sings at the Job

By C. R. Burnham

A SERIES of good meetings has been held at Wisconsin this year. Dr. Riker, of the Department of Plant Pathology opened our first meeting by telling us of his travels about Europe. He observed that the English research workers stress the social side of life more so than do the Americans. Even Dr. J. Magrou of the Pasteur Institute finds time to keep up his musical talent for he is now completing an opera.

Dr. R. H. Roberts of the Horticulture Department, another Phi Sigma alumnus, gave us a very interesting talk on "New Findings in Horticulture". Then at a later meeting brother S. W. Kletzien talked on "The Chemistry of the Egg", and brother J. Sinclair on, "Axial Duplication and the Embryonic Rest Period".

The outstanding lecture of the semester was given by Prof. Louis Kahlenberg on "Where Biology and Chemistry Meet". For this special open meeting Sigma Delta Epsilon, Gamma Alpha, Sigma Sigma, Phi Lambda Upsilon and guests were invited. Prof. Kahlenberg traced in great oratorical style the development of biology and chemistry, pointing out that chemistry had its beginning in the study of medicine. Since the ultimate aim of the biologist is to determine the nature of life, the chemist and the biologist must work together. Both of them must develop new methods of attack in their study of the essence of the vital forces inherent in living matter.

## ALUMNI NEWS

### NEW ADDRESSES

Dr. G. S. Avery—Instructor in Botany, Duke University, Durham, N. C.

Dr. J. M. Beal—Department of Botany, Miss. A. and M. College.

Dr. W. G. Campbell—With the School of Forestry, Oxford University, England.

Dr. L. F. Chao—Continuing his cytological studies on rice at Cornell University, New York.

Dr. H. V. Gibson—Private practice at Shiek's Clinic, Rhinelander, Wisconsin.

Prof. A. H. Gilbert—Department of Plant Pathology, University of Vermont.

H. M. Hefley—Zoology Assistant to Prof. A. S. Pearse, Duke University.

G. E. Helz—Dept. of Bacteriology, Ohio State University.

Prof. H. Jackson—Botanist at the Experiment Station, Purdue University.

Prof. J. E. Judson—Botanist at Albion College, Michigan.

Dr. K. P. Link—who has returned to Madison, Wis., after 2 years study of carbohydrate chemistry in England and Germany.

Dr. M. A. McCall—U.S.D.A. Division of cereal crops and diseases.

Dr. A. H. Meyer—Prof. of Soils, South Carolina A. and M. College.

P. M. Simmonds—with the Dominion Experimental Farms, Saskatoon, Saskatchewan, Canada.

L. W. Taylor—Assistant in the Poultry Dept., University of Kentucky.

T. M. Taylor—Botany Department, Toronto University, Canada.

Dr. H. R. Thornton—Dept. of Bacteriology, North Dakota Agri. College.

Dr. R. W. Titus—Chemistry Dept. Kansas State Agricultural College.

Prof. W. P. Tufts—Horticulture, University of California.

V. M. Watts—Instructor in Horticulture. University of Arkansas.

S. Wright—U. S. Bureau of Fisheries, and stationed at Michigan University.

The following members from other chapters have been welcomed by Zeta:

Prof. B. M. Duggar and T. D. Mallery of Iota Chapter, Missouri. M. R. Harris of Mu Chapter, California.

*Read The Biologist*

## The Phi Sigma Boast

We eat hot dogs, we spurn egg nogs,
We grow good grain and feed fat hogs,
And now and then we slice up frogs,
With war paint on and fighting togs.
We're a big bad bunch of biologs.
Yea! Phi Sigma.

We know that cats inherit fleas,
We know why chickens get weak knees,
And every kind of plant disease
We diagnose with the greatest ease;
Of course we pass for Ph.D's.
Yea! Phi Sigma.

So gather round in a ring again
And give three cheers for our research, then
If any dumb-bell dares to grin
We'll tan his hide for a muskrat skin;
We're the Phi Sig boys of Wisconsin.
Yea! Phi Sigma.

By Dr. L. E. Noland, Zeta ('20)

## Hotdogus!—Eggnogus!

"Sit together, listen together,
Sing together, eat together,
and you'll work together."

## If You Want to Be a Phi Sigma

If you want to be a Phi Sig,
Just come along with me,
To the Lab where we scab,
Till we get our degree;

Then come to eat with the Phi Sigs,
And talk like Ph.D's,
Where we blow up in smoke fool ideas.

Chorus:

To a Phi Sig meet we go,
To a Phi Sig meet we go,
There to hear and to learn,
What research we can do:
For a Phi Sig's a gay fellow,
And scientist sure will be,
When he finally gets his Ph.D.

(Tune: If You Want to Be a Badger)

By Dr. B. Domogalla, Zeta ('24)

## ETA

By T. A. Krutky

CONCERNING the news of the Eta Chapter, it gives me pleasure to announce that Prof. R. A. Slagg, a new faculty member of the Akron University, has been chosen to membership in the Phi Sigma Society. He has added a course in geology for the Biology Department.

It might be interesting to know that Mr. Pittinger, the former president of the Eta Chapter, is now attending a medical college in St. Louis. Mr. Sheinen, Mr. Karam, and Mr. Tsaloff intend to enter a medical school in the near future. Mr. Zimmerman, another alumnus, is teaching high school chemistry.

During our last meeting, each member gave an interesting talk in the interest of Phi Sigma. The members have decided to hold an open meeting for students of high standing in biological fields; to find new and worthy candidates.

Our research problems are progressing, with expectations of producing papers soon.

*Read The Biologist*

## THETA

### Not Reported

*Read The Biologist*

## IOTA

### Two Awarded Iota Woods-Hole Scholarships

By Mildred E. Mathias

IOTA Chapter now has sixty-seven members, thirty-four faculty and thirty-three active members. The first meeting of the year was held October 12 in the auditorium of the new biology building, Robstock Hall. As is customary at the first meeting of the year, the holders of the Phi Sigma scholarships for the past summer reported. This year Iota Chapter was able to award two summer scholarships instead of the usual one. Mr. Ernest Runyon, a graduate student in Botany, received one scholarship and spent the summer at Woods Hole; the other award went to Mr. John Stumberg, a graduate student in Zoology, who spent his summer at the Puget Sound Biological Station, Friday Harbor, Washington. Dr. A. I. Kendall of the Bacteriology Department of the Medical School, gave a very interesting talk on the development of intellect. The names of fourteen possible members were suggested by the chairman of the membership committee and the election of new members is to take place at the November meeting, followed by initiation at the annual banquet to be held the last of November.

Several members of Iota Chapter received the doctor's degree last spring: Miss Margherita Cotonio, now Mrs. Geoffrey Bourne, Mr. P. W. Preisler, Mr. C. E. Kobuski, Mr. F. O. Schmitt, Mr. J. C. Hinsey, and Mr. D. C. Neal. Eleven members received the Master of Science degree and one, the Bachelor of Arts.

Iota Chapter regrets to report the death of one of their charter members, Dr. Edwin B. Payson, formerly of the University of Wyoming.

*Read The Biologist*

## KAPPA

### The Projects of 66 Investigators Reported—All Phi Sig's

By C. R. Garvey

A. Received May, 1927.

KAPPA Chapter meets regularly every other Thursday evening at 5:30 and, after eating together a good substantial meal prepared by one of the various departments represented, we have a talk by one of the members, usually on some scientific topic in which he is especially interested or has just completed some special work.

Since the last issue of THE BIOLOGIST, we have had the following lectures accompanied by lantern slides.

Dr. Curt Rosenow of the Psychology Department, "Psychology as a Science".

Dr. Phillip Raedio of the Entomology Department, "The Assassin Bug".

Dr. Latimer of Anatomy, "The History of the Pearl Button Industry".

Dr. Helson of Psychology, "The New Objective Psychology, with some Implications for Biology".

Dr. Lane of Zoology, "Early American Scientists".

Dr. Treece of Bacteriology, "Bacterial Metabolism".

Dr. Stoland of Physiology, "The Use of the Electrocardiograph".

At the last meeting of Kappa chapter we initiated two new members, Stanley B. Lindley of the Psychology Department and Miss Jennie Macoubrie of the Zoology Department. The following new officers were also elected: C. R. Garvey, President; S. Howard Bartley, Vice-President; Margaret Schumann, Secretary; and Glenn Giffin, Treasurer.

## Summer Activities of Several Faculty and Student Members

By George T. McNair

B. Received December, 1927

DR. H. H. Lane, Head of the Department of Zoology, in company with Mr. H. T. Martin, Assistant Curator of Vertebrate Paleontology, and Mr. Ernst Keisen, assistant in the museum (formerly with the American Museum), spent five weeks collecting from the mid-Eocene deposits in the Bridger Basin in southwestern Wyoming. Between four and five hundred specimens of vertebrate fossils were obtained, the great majority being mammals.

Dr. A. A. Schaeffer spent the month of June in the Tortugas off the Gulf of Mexico, and the months of July and August at Woods Hole, Massachusetts, continuing his studies of amoeboid movement.

Dr. W. H. Burt has accepted a teaching fellowship in Vertebrate Zoology at the University of California.

Professor W. C. Stevens, Head of the Department of Botany, spent a considerable part of his summer collecting botanical materials in and around Santa Fe, New Mexico.

Dr. H. B. Hungerford, Head of the Department of Entomology, had charge of the entomological work at the University of Michigan's biological station at Douglas Lake, Michigan. He also spent a few days at the Corn Borer Laboratory at Monroe, Michigan.

Mr. Howard Day was supervisor of the Federal Corn Borer Scouts of the State of Indiana.

Dr. P. A. Readio and R. H. Beamer made an extensive collecting trip into Texas, Colorado, New Mexico, and Arizona.

Miss Kathlene Doering visited the New York State Museum at Albany, the American Museum at New York City, and the National Museum at Washington, in connection with her research work.

Mr. George Gould was employed in the Corn Borer Control work in the State of Indiana.

Dr. H. C. Tracy, Head of the Department of Anatomy, spent the summer doing survey work in the marine waters around Mt. Desert Island, Maine. Dr. Tracy is working on the classification of the fishes, ascidia, and bryozoa in that region.

Mr. Simon Cohen was employed as artist for the survey, which is financed by Mr. Wm. Proctor of Bar Harbor, Maine.

D. S. Pankratz and E. R. Lucas spent the greater part of the summer at Woods Hole taking courses and collecting research material.

Miss Clara Nigg has returned to the University of Kansas after having spent one year as serologist at the Queen's Hospital, Honolulu, T. H. While there, she made a study of blood grouping among pure Hawaiians on the various islands of the group. She returns as instructor in the Bacteriology Department in this school.

Miss Frances Dunmire, of the Department of Bacteriology, left in August for Honolulu where she will take up her new position as serologist and bio-chemist at the Queen's Hospital. Miss Dunmire received her M.A. degree in Bacteriology in the spring of 1927.

Miss Mary Crum also left for Honolulu in August. She has taken the position of chemical pathologist in the laboratory of Queen's Hospital.

*Read The Biologist*

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# LAMBDA

## Elects New Members

## Chapter Promises to Be a Live One

By Kenneth Davis

LAMBDA of Phi Sigma is beginning a new year with seventeen active members made up of students from Botany, Biology, and Forestry courses, and nine faculty members. Regular meetings are held the first Tuesday of each month of the school year.

David Maclay, a senior in the Biology Department, is the chapter president; Charles Debrovolney is vice-president; Josephine Darlington is secretary; and Charles Rouse is treasurer.

This year it is planned to have an interesting and varied series of talks and discussions, given chiefly by the student members, in addition to the regular business meetings. Several members are engaged in research problems, and they will report their progress to the society; whereas other subjects are assigned. From all indications, the coming year promises to be one of the best in the history of the chapter.

At the first meeting of this fall, each member gave a short account of how he or she spent the summer. The second meeting was given over to the election of seven new members who are to be initiated sometime in December. A banquet is to be given in their honor.

Alumni of Lambda Chapter are widely scattered. Jim O'Connor is studying medicine at Rush College, Chicago; Cammie Meagher is at Johns Hopkins; and Bus Tarbox is at Montreal. Several from last year's graduating class are teaching school.

*Read The Biologist*

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## MU

### Californians Find Dinner Meetings a Real Social Success

By John Thomas Howell, Jr.

Received May, 1927

MU chapter under the direction of Mr. Harold E. Thomas has had a very successful year. Meetings were held about every three weeks. During the past spring two informal dinner meetings were held and it was found that they were highly enjoyable and very well attended. They seemed to be a real social success, a fine means for members of the different departments of biological study to get acquainted. After dinner talks were given followed by discussion. Besides these meetings regular business meetings were held and though they were not so well attended, the members present were always very much interested in the activities of the society. Short talks were generally given in conjunction.

During the past year a large number of subjects was discussed by members of various departments. At one of the meetings short talks were given by graduate workers in the Zoology Department. Dr. S. S. Maxwell of the Physiology Department at one of the dinner meetings talked on "Current Research Problems in Physiology." At another meeting the subject "Biometry" in which the aspects of statistical work in biology was discussed, was presented by Mrs. E. L. Lucia of the Department of Hygiene. Mr. H. L. Mason of the Botany Department told of the islands off the coast of Mexico which he visited with an expedition sent there by the California Academy of Sciences. At other meetings different graduates discussed their problems in research.

From these talks we learn of the work being carried on in the various departments. This is of great value to the chapter in general as a decisive unifying influence since the departments are in several different colleges —those of Agriculture, Letters and Science and the Medical Departments. In the Department of Pomology researches center about the physiology of the pear tree. The Department of Plant Pathology is interested in plant diseases of economic importance. In Plant Nutrition soil solution and the absorption of ions are being studied together with the important and interesting study of photocatalysis. Research students in the Department of Physiology are doing work on animal equilibria; in Zoology the outstanding study is in protozoology.

*Read The Biologist*

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## NU

### Sponsor Biological Exhibit

By Franklin B. Cooper

A. Received May, 1927.

A RETROSPECT of the biological activities of the past year truly reveals the importance of Phi Sigma at Washington & Jefferson College, especially to everything pertaining to Biology. Mr. Franklin B. Cooper, an enthusiastic member of the previous year was elected secretary, upon the elevation of our former secretary, Mr. R. B. Atwell, to the presidency. The active membership at this time consisted of seven and each selected a special phase of biology, upon which our effort would be directed throughout the College year, reports of this study to be presented to the society at the semi-monthly meetings. The meetings of the first semester have been largely devoted to the review of this material embracing studies in evolution, morphology, parasitology, human diseases, morbidity and mortality statistics of cancer together with reviews of current biological literature.

An added impetus was given the opening event of the second semester and the initiation of new members by a very enthusiastic meeting, together with a banquet at the home of Dr. George W. Martin. After transacting the routine business, and the initiation of four new members, the meeting resolved itself into an open forum discussion, in which future plans were formulated. It was decided that Phi Sigma should sponsor an exhibit and open house at the biological laboratory, with special attention to the museum, inviting in all the town people, with special invitation to the local high school students. Each member of the society being responsible for some phase of the exhibit and a tentative classification was devised.

The biological museum is housed in a large annex to the laboratory and consists of an unusually good collection of zoological, botanical, geological, paleontological, and mineralogical specimens. The herbarium has been much enriched by exchange and donation from the herbarium at the Carnegie Museum at Pittsburgh, Pa. And especially Dr. Martin's private collection of plants and plant pathological material. Also included in the museum is a set of Ward's College Castes, which facilitates the teaching of all branches of systematic zoology. All the orders of marine invertebrates are illustrated in the collection made by Emeritus Professor Edward Linton during his long connection with the scientific work of the United States Fish Commission.

At a subsequent meeting, Dr. J. B. Garner, chemist, geologist, gas and oil expert of the People's Natural Gas Co., was initiated an honorary member and spoke to the pre-medical society, this meeting being sponsored by Phi Sigma, on the relationship of Chemistry to Medicine.

The destinies of the society are still under the guidance of Dr. George W. Martin, head of the department, and Mr. C. D. Dieter, instructor. Mr. Porter, an honor student of last year's class and specializing in Biology, has been secured as a teaching fellow in the department, and is doing graduate work in Botany. Mr. Bebout, an active member, has been appointed head of the Science department of a local high school. Many of our last year men are now in various medical schools throughout the east.

The biological atmosphere at Washington & Jefferson will continue to fan the spark that has been so vital, ready to burst into a new flame with the opening of College next Fall. Wishing all a pleasant Summer.

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B. Received December, 1927.

By M. Allen Duff

Nu chapter opened the new school year with the initiation of nine new members:

J. R. Braden
P. F. Briola
C. H. Miller
W. A. Prideaux
P. P. Volpitto
W. A. Hawkinson
J. F. Jose
R. J. Mitchell
J. O. Rubies

Last spring the officers for the coming year were elected: J. K. Mack, Pres.; R. W. Loveland, Sec. and Treas.; and M. Allen Duff Editor to THE BIOLOGIST.

This past year at Washington and Jefferson has been marked by greater activity on the part of Nu Chapter of Phi Sigma on account of the "Biological Exhibit" sponsored by Phi Sigma. The Biological Laboratory and Museum were opened to the public (with special invitation to the high schools in this vicinity) each member having had a certain section of the laboratory or museum under his charge. He explained to the visitors his part of the museum laboratory. As a result, much interest was aroused, particularly in the museum. Here one finds an unusually fine collection of zoological, botanical, geological, paleontological, and mineralogical specimens. Nearly all the orders of marine invertebrates are illustrated in the collection made by Prof. Edwin Linton during his long connection with the scientific work of the United States Fish Commission.

*Read The Biologist*

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## XI

### "A Hard Working Lot"

By R. W. Samson

A. Received May, 1927.

NINE of the sixteen active members of Xi chapter are graduate students working for Masters' or Doctors' degrees in the biological sciences. Practically every one has been assisting in class and laboratory or doing research work along with his course work. The other seven are seniors, most of whom are also assisting or doing research aside from their regular studies. Thus, it seems that the members, active during the year 1926-1927, happen to be a hard working lot. They are all applying themselves most assiduously to the research and instructional phases of biology.

The members have been very busy thruout the year with their individual duties. Consequently the chapter has not attempted to do much more than maintain the regular bimonthly schedule of meetings. Due to the efficient management by the president, Mr. L. G. Worley, and the treasurer, Mr. O. L. Williams, the local organization and financial matters have taken up very little of the time at meetings. The meetings have been given over almost entirely to hearing papers and discussing problems of interest to graduate students in biology. The members have found the two hours a month spent in Phi Sigma meetings to be profitable ones.

The officers of Xi chapter for 1926-1927 were as follows: President, L. G. Worley; vice-president, R. W. Samson; secretary, Miss Ruth Meyer; treasurer, O. L. Williams.

A few notes concerning some of the chapter members and their activities may be of interest.

John A. Cameron, one of the strong supporters of the local chapter for several years past, is now Dean of Men and instructor in science in the McCook (Nebraska) Junior College. John likes his work fine, so we hear, and the McCook people seem to be falling for John. The local chapter misses him, however.

Miss Wilma Searson, Mr. O. L. Williams and Mr. L. G. Worley spent the summer of 1926 at the University of Washington Biological Station at Friday Harbor, Washington. Mr. Worley will study there again this coming summer. Mr. Williams intends to go to the University of California for graduate work during the summer and following school year. Miss Searson expects to study at Woods Hole, Mass.

Mr. Chas. Whitfield worked with Dr. F. C. Clements at the Alpine Laboratory on Pike's Peak during the summer of 1926 and will assist there again this summer.

Miss Ruth Meyer, the chapter secretary, is one of the four chapter members who will receive Masters' degrees in botany this spring. She will sail for Europe immediately on completing her work here and expects to spend the summer in Germany, France and Switzerland.

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## Members Have Been Active in Summer Research

By Helen M. Buttery

B. Received December, 1927

WITH the opening of the 1927-28 session, Xi chapter looks forward to a very enthusiastic membership. Twelve active members were present at our last meeting.

Plans for the year's work were formulated and discussed. The program committee favors a student program consisting of papers on research followed by discussion, varied with an occasional meeting turned over to some prominent speaker.

Our most recent meeting proved to be an unusually interesting one. Each member gave an account of his summer biological experiences and we discovered that our members had been very busy in their various lines of research.

Plans are now being made for the initiation banquet which is to be given November 16.

A list of subjects being investigated by the members of our chapter appears for our Chapter in "The Grist We Grind."

Elizabeth Hartman has returned this year for full time graduate study, with the aid of a fellowship from Mount Holyoke. She is continuing her morphological and microchemical work on the opening of the antheridium in the Polypodiaceae and is studying botany and chemistry toward the fulfillment of the requirements for the degree of Doctor of Philosophy.

Helen Buttery, a graduate assistant in botany, is working on an ecological problem. A detailed analysis of plant competition.

Theodora Klose comes to us from Lambda chapter. She is working on the Determination of photosynthate by the picric acid method devised by Dr. Long.

Charles Whitfield is employed by the Carnegie Institution of Washington in the field of Ecology at the Alpine Laboratory located on the slopes of Pikes Peak. His work is a continuation of the studies in adaptation which was started some ten years ago. Gardens have been established at various altitudes and many plants of a limited number of species are moved back and forth to these areas. The adaptation of the plant to the habitat is being observed. Another problem undertaken this summer was the plasticity of *Caltha leptosepla.* This plant is found in a range of altitude of nearly 5,000 feet. A study of the ecological, physiological, and histological phases of the plant was started.

M. Kopac, a graduate student in Zoology, has just completed an apparatus for micro-dissection which he intends to use in his research work.

Karl Koch is a student in the departments of Entomology and Plant Pathology. He is working on the transmission of Virus diseases to the potato, by means of insects.

T. R. Steiger, a candidate for his Ph.D. degree, has been working on an ecological study of the prairie vegetation in the vicinity of Lincoln, Nebraska, collecting data on environmental factors and especially investigating the density and distribution of species.

Leonard Worley, graduate assistant in the Zoology Department, is working on a list and key to spiders of Nebraska. Mr. Worley was engaged during the summer as an assistant in Animal Ecology at the Puget Sound Biological Station at Friday Harbor.

He also prepared a list and key to spiders of Puget Sound including 200 species.

**James H. Jensen**, field assistant in Plant Pathology, is investigating the Bacterial Wilt of Alfalfa in the vicinity of Kearney, Nebraska.

**George Herzog** is employed at the Nebraska State Museum in zoological exhibition work. He did scientific collecting of rodents and insects in the sand hill region of our state during the summer.

**Charles Olmstead** is completing his undergraduate work with a major in botany and minors in zoology and chemistry. He has done research this summer on the corn borer problem in the state of Ohio.

*Read The Biologist*

## OMICRON

### Phi Sig Flourishes

By C. O. Evanson

A. Report received May, 1927.

NORTH Dakota, Omicron Chapter, is enjoying a very successful school year. Election of new members on November 15, 1926, included the following who were duly initiated.

| | |
|---|---|
| Chauncey Borman | Leland Lewis |
| Kenneth Leiby | Charles O. Evanson |
| Kenneth Crawford | Gerald Knutson |
| Blanche Slagerman | |

At the beginning of the second semester, Omicron Chapter held election of officers, at which time Jerome Syvertson was elected President; Chauncey Borman, Vice-Pres.; and Blanche Slagerman, Sec-Treas. The meetings, held every two weeks, have included addresses by the faculty and senior members of the society, and have all been followed with unusual interest.

Omicron members elected to Phi Beta Kappa include Melvin Hetland and James Walsh, and associate membership in Sigma Xi include Melvin Hetland, James Walsh, and Clara Conklin.

The annual Phi Sigma spring picnic is being arranged for, and the get-together promises to be a very appropriate manner by which to conclude the successful season which Omicron has enjoyed.

It is regretted by all the members of Omicron Chapter that Miss Marie Petron, president '26, and assistant in Zoology,was forced to leave school at the end of the first semester, due to ill health.

Dr. R. T. Young, former faculty advisor of Omicron Chapter of Phi Sigma and Head of the Biology Department at North Dakota, is now in the Biology Department at the University of Montana.

B. Report received December, 1927.

OMICRON Chapter of Phi Sigma held its first meeting of the school year in October, when Professor Edgar A. Baird of the Botany Department gave an interesting paper on some of the fundamental phases of plant nutrition. Our meetings, held every two weeks, have been given over to the active members. Some very interesting talks upon several worthwhile scientific subjects have been greatly enjoyed at each active meeting.

Chauncey Borman read a paper on "The Increase in Mortality Due to Heart Disease in the United States". Leland Lewis presented a paper on "Thyroxin". This plan of meeting is intended to be carried out for the remainder of the year, with occasional talks being given by members of the faculty.

Our readers will find that Phi Sigma members at Omicron are doing research work, as evidenced by the number of projects which are mentioned in this issue of THE BIOLOGIST under The Grist We Grind.

*Read The Biologist*

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# PI

## Chapter Is Gaining Strength

By J. P. Turner

A. Received May, 1927.

PI Chapter wishes to announce the following new members who were initiated during the winter quarter at Emory:

Mr. Perry Wilber Fattig, Curator of Museum, Emory, Ga., who has recently been studying the Ecology of the Bumble Bee. He was also connected with the federal grasshopper control work for one year and rendered valuable service in that line.

Mr. Thomas Fort Sellers, Director, State Board of Health, Atlanta, Ga., and now taking work in the Medical School at Emory.

Miss Lucille Jane Caldwell, Instructor, Agnes Scott College, Decatur, Ga., and taking graduate work in the Biology Department at Emory.

Mr. Willie B. Redmond, student assistant in Emory Biology Department; Chapel Hill, Tenn.

Mr. Robert Hebard Bayley, student assistant, Emory Biology Department; Ridgewood Road, Atlanta, Ga.

Mr. Eugene Anson Stead, student assistant, Emory Biology Department; and research assistant; Decatur, Ga.

Mr. John Milton Stockman, student assistant, Emory Biology Department; Nashville, Tenn.

Mr. Bascom Anthony Belcher, student assistant and research assistant, Emory Biology Department; Cairo, Ga.

Pi Chapter has recently gone through some changes that we believe will bring a season of prosperity to her. With increased membership and a closer contact between members already on the campus, greater interest has been developed toward the activities of the local chapter and toward the National Society.

At the second meeting of the winter quarter, Mr. H. P. Sturdivant our delegate to the Philadelphia convention, gave a glowing account of the Phi Sigma meetings held in that city. Dr. R. C. Rhodes, head of the local Biology Department gave a very interesting and instructive paper on

Heteronema. He read the same paper at the A. A. A. S. convention.

There are a number of research problems being worked on at the present time by members of Pi Chapter and before long we hope that we will have some papers to report in The Grist We Grind in THE BIOLOGIST.

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### Emory Is 100% for Research

B. Received December, 1927.

Pi Chapter of Phi Sigma has started the year with much brighter prospects than it had at the same time last year. More old members have returned this fall than ever before and by Christmas we expect to practically double our membership by initiating new members. Those returning this year are:

Mr. T. F. Sellers
Mr. Eugene Stead
Mr. R. H. Bayley
Mr. Kenneth Bell
Miss Ruth Pirkle
Prof. A. R. Rhamy
Dr. W. B. Baker
Dr. Homer Blincoe
Dr. R. C. Rhodes
Mr. Milton Stockman
Mr. B. A. Belcher
Mr. W. B. Redmond
Miss Lucille Caldwell
Prof. J. P. Turner
Prof. P. W. Fattig
Dr. Mary S. MacDougall
Dr. R. S. Leadingham
Dr. J. G. Bachman

The first meeting of the year was held at the home of Dr. R. C. Rhodes, head of the biology department. Plans were made for the coming year and a program was outlined that will include several public meetings, at which times prominent speakers will be invited to address the society and all outsiders who are interested in biology. The program committee will be in charge of all the details of the meetings including the ''eats'', which are certainly not the least part of any meeting.

After the business of the meeting was dispensed with, delightful refreshments were served by Mrs. Rhodes.

Perhaps the most outstanding bit of news about Pi chapter is the fact that we are now moving into new quarters. The chemistry building was recently completed and will temporarily house the biology department as well as the chemistry. Biology will occupy the entire first floor, lecture rooms on the second floor and five research rooms on the fifth floor. The chemistry department will occupy the rest of the building. Animal cages, sun rooms, etc. are also located on the fifth floor.

Before many years we hope to have a Life Science building that will complete the science buildings group on the campus. However, the new building we are now moving into will be a great improvement over our recent cramped quarters.

For the benefit of those who desire personal view points, the writer will say that he has never seen a keener interest in research than is shown this year among the biology students at Emory. The spirit of research is strong in the biology department here and it is spreading more rapidly than many people in other parts of the country realize. The future looks bright for scientific investigation in the south, and the biological sciences, because of their vital interest and fundamental bearing on human relationships are destined to take the lead in spreading the scientific attitude and the spirit of research. Phi Sigma is doing its part in the carrying out of this broad program, as is shown by the fact that every member of Pi Chapter is actively engaged in research, whether graduate or undergraduate.

We are expecting the greatest year we have ever had and we sincerely hope that our sister chapters feel as optimistic over the future as we do.

*Read The Biologist*

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## RHO

### Reports 27 Doctorate Theses

By S. W. Decker

Received May, 1927.

RHO Chapter's autumn initiation and banquet were held at the Urbana-Lincoln Hotel, December 15. Dr. W. L. Burlison, Head of the Department of Agronomy, gave an illustrated lecture on equipment and methods employed at the Boyce Thompson Institute for Plant Research. Twenty initiates were tendered active membership. They were as follows: M. P. Catherwood, Asst. in Soil Fert.; A. L. Hertel, Graduate Study in Zoology; E. A. Hollowell, Asst. Agronomist, U. S.D.A.; W. A. Huelsen, Asst. Prof. of Oleri.; A. S. Hyde, Asst. in Zoology; M. R. Isaacson, Asst. in Soil Surv. Mapping; A. F. Kuhlman, Instr. in Dairy Husb.; Charlott Liebtag, Asst. in Bot.; J. G. Mackin, Graduate Study in Zool.; Louise Millhouse, Lab. Asst. in Dietetics; Dorothy Moore, Lab. Asst. in Nutr.; W. R. Paden, Asst. in Soil Biol.; Vivian Pires, Graduate Study in Bot.; J. M. Sanders, Asst. in Zool.; R. M. Sallee, Asst. in Bot.; D. M. Short, Graduate Study in Zool.; H. J. Sloan, Asst. in An. Husb.; L. C. Thomas, Asst. in An. Breed.; Mary E. Tucker, Graduate Study in Zool.; K. E. Wright, Asst. in Dairy Chem.

At the January meeting Dr. H. J. VanCleave gave an interesting illustrated lecture on "Autographs of some noted scientists from the time of Agassiz". Mr. R. M. DeCoursey, who acted as the delegate from Rho Chapter to the National Convention, gave a report of his trip and matters considered at the meetings. A month later Mr. N. A. Pettinger gave an illustrated lecture on "Inheritance of Abnormalities and other Characters in Corn", which was much enjoyed. Then for fear that all work and no play would make Jack a dull boy the evening was concluded by a social mixer. At the March meeting Dr. W. V. Balduf spoke on "Insects Parasitism". Officers for the next year were elected; the honored ones being W. G. Solheim, president; B. H. Hill, Vice-President; W. M. Luce, Treasurer; R. M. Sallee, Recording Secretary; F. M. Clark, Corresponding Secretary; and S. W. Decker, Editor. Spring election to membership was also held at this time.

Rho Chapter is pleased to announce that 27 members are candidates for degrees in June; the titles of their theses are given under The Grist We Grind.

*Read The Biologist*

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## SIGMA

### Florida Banquets in Its Biological Station

By H. K. Wallace

A. Received May, 1927.

OUR total local enrollment is twenty-one members composed of undergraduates, postgraduates, and faculty members. All of these men (the University of Florida is not co-educational) take an active interest in Phi Sigma and are holding it well to the front on the University of Florida campus.

The Sigma chapter holds meetings twice a month in one of the biology lecture rooms in Science Hall. Several days prior to the date of the meeting the program committee sends out printed cards to each member announcing the program, the time of meeting, and who will be the speaker for the evening.

Our programs consist mainly of lectures by the various scientists that visit the campus. These men give lectures on many and varied lines of scientific work. Our own members furnish almost as many kinds of programs since they represent all the eligible branches of science on the Florida campus. We believe that this kind of meeting is the most instructive and entertaining that we can have for our members and visitors.

Membership to the chapter is granted only after the individual has satisfied the requirements of the National organization. In addition they must possess qualities that will mark them as men of character in everyday walks of life. We expect them to uphold the ideals of the society. This last fall eight men were initiated. After the formal initiation we adjourned to the Biological Station for our banquet. This station is located about five miles from Gainsville in the heart of a typical Florida forest. Each new member was at once hustled off to the woods, lake, or swamp in the nearby darkness with a box of matches. Their mission was to collect an unattainable member of a representative phylla. After both matches and patience had been exhausted all gathered again by the light of the campfire to classify their catches. The banquet was a huge success. Each member present broiled his own steak fixed to a sharpened stick and held it over the glowing coals and vied with his neighbor as to the best way of cooking it. Result: We work together.

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### Collections in Southern Waters

B. Received December, 1927.

IN the spring of the 1926-27 term, several members of the local Phi Sigma Chapter, including Professors Rogers and Hubbell of our Biology Department, as well as Doctors Needham, Crosby, and Leonard of Cornell University, enjoyed a three day trip collecting insects in the northwestern part of the state at Camp Torria, Rock Bluff, along the Appalachacola River.

The trip proved to be a very profitable one, since several new insect records were made and several new forms, rare for this territory, were added to our list. Drs. Crosby and Leonard were especially elated at finding a male spider that had never before been taken. The female had already been captured and described, but the male had eluded everyone. Florida is indeed a collector's paradise, as there is abundant fauna, and very little work has been done in the past in collecting and identifying our forms. It was in this same region that Prof. Hubbell collected *Hubbellius praestans,* a new genus of Orthoptera. Professor Hubbell is one of the few men who has worked on Florida forms. He has made an extensive collection of Orthoptera, limiting his work to certain families. Dr. Rogers has also made a large collection of Tipulidae, a group in which he is specializing. Professor Byers, also of our department, has done quite a large amount of work on the Odonata. Various individuals on the campus have done work along similar lines.

The activities of Sigma Chapter consist of our regular meetings, occasional lectures, trips, and outings at the Biological Station on Newman's Lake. Initiations are also held at "The Station". Members are selected for their ability and interest in Biology and related sciences. The chapter roll is small, not including more than twenty men.

Heretofore, little research has been done in the Biology Department except by the professors. This results from the short time in which the school has been in existence. It has developed very rapidly in the past few years, however. During the past summer, the entire Biology Department underwent a transformation, moving into larger quarters and purchasing new equipment which has greatly extended its capacity to handle a diversity of biological problems. Consequently, it is expected that more research work will be done in the near future. The Florida State Experiment Station, located on this campus, is, at present, holding up the research end of our scientific activities. The men in the Station are conducting research projects on some of the agricultural problems confronting this state, and are also doing some experimentation along purely theoretical lines.

Later in the year, Sigma Chapter is planning to take a trip to Cedar Keys on the Gulf of Mexico, to study and collect a variety of aquatic forms to be found there. Florida is a particularly rich field for the collector of biological material, since there is so much virgin and untouched territory.

*Read The Biologist*

## TAU

### Reported Research Only

(See "Grist We Grind")

*Read The Biologist*

## UPSILON

### Chapter Addressed by Noted Biologists

By A. PRESS

ON November 15 we had the pleasure of having Dr. L. H. Tiffany, Professor of Botany at Ohio State University, address us. He spoke on "Some Economic Aspects of the Algae". At two previous meeting we enjoyed lectures by Dr. W. Shideler of the Department of Geology, and Dr. B. M. Davis of the Department of Biology of Miami University. On October 18 eleven new members were initiated. At future meetings we are planning to have some of our active members present problems of research they have worked out.

*Read The Biologist*

## PHI

### Dorothy Burpel Wins Phi Chapter Commencement Prize

By DOROTHY T. SMITH

PHI Chapter has greatly enjoyed its first year of affiliation with Phi Sigma. We have tried to incorporate the true spirit of Phi Sigma by encouraging research, consequently last year each member was required to give a paper on his own research problem, while each new member was required to present an extensive thesis. Our meetings were held at fraternity house and faculty homes which made informal discussions possible. A Valentine and St. Patricks Day Party added to the social element. We had merry rides on toboggans in transit to many of the meetings.

In April, Phi Chapter entertained Dr. Francis Benedict of the Carnegie Institute of Boston, who spoke at an open meeting to the students and faculty members on, "The Status of Physiological Research in Europe".

The following members were elected and installed in May:

Randall Brooks
Dorothy Fields
Katherine Flanagan
Kelsea Griffin
Robert Garner
Cavett Prickett

The following officers were elected and installed for the coming year: President, Dorothy T. Smith; Vice-President, Margaret B. Torrey; Secretary, Beulah Merrill; Corresponding Secretary, Marguerite Pollard; Treasurer, C. W. French; Marshal, B. W. Lyman; Sentinel, G. W. White.

The annual Field Day was an overnight trip to Goat Island in Great Bay. The members enjoyed a sail in Great Bay as well as the Clam Bake which followed.

The following Pi Gamma members were installed during the last year as members of Phi Sigma; Leroy Higgins, Frank Lewis, Elna Perkins, Alice Saxton, and Clark Stevens.

At Commencement, Phi Chapter offered a prize of twenty-five dollars to that Senior who excelled in biological sciences throughout his college career. This prize was presented to Dorothy Burpee, a member of Phi Chapter.

This Fall, we started the new year with our annual trip to the White Mountains on October first. Seventeen of our members climbed Mt. Chococura and studied the geological formation and the nature of the animal and plant life found there.

Due to a pressure of other duties, C. W. French resigned as Treasurer and G. W. White as Sentinel and Walter Chipman and C. O. Prickett have been elected to the respective offices.

Dr. L. P. Latimer of Mu Chapter of the University of California and Dr. Eton Gildow of Zeta Chapter of the University of Wisconsin have transferred to Phi Chapter.

Printed programs of the activities of the coming year have been prepared.

A Halloween costume party was held at the home of Professor and Mrs. Woodward and the following candidates were pledged: Evelyn Davis, Leon Glover, Sadie M. Griffiths, Joseph Hanagan, Alfred Hebert, Joseph Houser, T. Ralph Meyers, John Mara, Theodore Karabelas, Nosbert Lough, and Robert Smith.

*Read The Biologist*

# CHI

## Typhus Fever and Rocky Mountain Spotted Fever Command the Attention of Investigators in Our Baby Chapter

By Edith Swingle and
W. L. Young

CHI Chapter started the year with five active members to carry out a program of activities in keeping with Phi Sigma aims and ideals. However, five new members were initiated early in the fall quarter.

The general plan for the year will be to have two meetings a month, one short meeting for business, and a longer one for a program at which various papers will be presented. It is planned to have various outside speakers address the chapter on their various special fields ef research. Two of the members are translating from the German a recent paper on "New etiological and pathological investigations in the Rickettsia group (Typhus Fever and Rocky Mountain Spotted Fever)" which will be presented later. One of the outstanding research activities in the state is the work on Rocky Mountain Spotted Fever which is being carried on in the laboratory at Hamilton, Montana, and in which two Phi Sigma members, Roy Kerlee ('27) and Glen Kohls ex '28, are engaged.

Of the ten active members of Chi, seven are engaged in research. A list of subjects included under "The

Grist We Grind'' shows the variety of work being done at the present time.

On the evening of October 13, Chi Chapter recently initiated the following to full membership: Fred Morton, Frank Hinman, Frieda Heickickson, Frank Hutchins, and Hardy Thorp.

At the last meeting, James Bradbury was elected president of our group, and Thomas Strand was elected vice-president.

### ALUMNI NOTES

Roy Kerles ('27) is working in the Rocky Mountain Spotted Fever laboratory at Hamilton, Montana.

George Cummins ('27) has a fellowship in Botany in the University of Michigan at Ann Arbor. He has transferred his membership to Beta Chapter there.

Heber Donohoe ('27) has a fellowship in Entomology at Washington State College, Pullman, Washington.

*Read The Biologist*

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# PHI CHAPTER *of* PHI SIGMA

## *PROGRAM*

### 1927-28

### PHI SIGMA SOCIETY

This organization is devoted to the promotion of interest in research in the biological sciences.

### NATIONAL COUNCIL

President..........Prof. Ira E. Cutler
University of Denver, Denver, Colorado.
Vice-President..........Dr. Anselm M. Keefe
St. Norberts College, West De Pere, Wisc.
Secretary..........Prof. C. I. Reed
Baylor University Medical School,
Dallas, Texas.
Treasurer..........Erwine Hall Stewart
Mesa, Colorado.
Assistant Secretary, Dr. Fanny Fern Davis
Blacksburg, Va.
Editor..........Everett F. Davis
Dept. Plant Physiology, Blacksburg, Va.

### PHI CHAPTER OF PHI SIGMA OFFICERS 1927-28

President..........Dorothy T. Smith
Vice-President..........Margaret B. Torrey
Corresponding Sec..........Marguerite Pollard
Recording Sec..........Beulah Merrill
Treasurer..........C. W. French
Marshal..........B. W. Lyman
Door-keeper..........G. W. White

Program Committee:

Margaret B. Torrey, Chairman
Anna Philbrook
John Sheehan

A Thesis is required of each new member. This thesis should constitute the main part of the program and occupy at least 30 minutes.

Papers are given by all members, and should occupy at least 15 minutes.

A copy of each thesis and paper must be filed with the Chapter Secretary at the time it is presented to the organization.

Dues must be paid before November first.

### FALL TERM, 1927

#### September 28

At the home of Prof. K. W. Woodward
Vacation Roll Call
Paper: Prof. K. W. Woodward

October 1

Mountain Trip:
General Chairman, C. F. Jackson
Transportation, G. W. White
Food and Equipment, W. A. Chipman

October 12

Thompson Hall

Business Meeting
Question Box, Constitution
Thesis: Katherine Flanagan
Papers: George White
Walter Chipman

October 19

Thompson Hall

Business Meeting
Paper: Alma D. Jackson

October 26

At the home of Prof. K. W. Woodward
Pledging Party

November 2

Thompson Hall

Council
Judge, Clark Stevens

November 9

Zero Degree
Donald G. Barton, Chairman
C. W. French Kelsea Griffin
L. P. Latimer Beulah Merrill
Robert Garner Marguerite Pollard

November 16

Initiation
Banquet: Margaret B. Torrey, Chairman
Beulah Merrill
Anna Philbrook
Menu: Kelsea Griffin
Waiters: B. W. Lyman
R. S. Garner
Equipment: John Sheehan, Chairman
C. O. Prickett
Katherine Flanagan
Dorothy Fields

November 30

Lambda Chi Alpha House

Thesis: C. O. Prickett
Papers: Anna Philbrook
Wilfred Osgood
Clark Stevens

December 7

At the home of Prof. C. F. Jackson

Christmas Party Ladies Entertaining
Christmas Committee
Margaret B. Torrey, Chairman
Presents, Anna Philbrook
Refreshments, Dorothy Fields, Marguerite Pollard
Entertainment, Beulah Merrill, Chairman; Katherine Flanagan

## WINTER TERM, 1928

January 4

Theta Kappa Phi House

Thesis: Norbert Lough
Dorothy Fields
Papers: John Sheehan
Edyth Tingley

January 18

Phi Mu Delta House

Thesis: Joseph Houser
Robert Garner
Papers: B. W. Lyman
C. F. Jackson

January 25

Chi Omega House

Thesis: Evalyn Davis
Kelsea Griffin
Papers: Beulah Merrill
L. P. Latimer

February 1

Theta Upsilon Omega House

Thesis: Leon Glover
Ralph Meyers
Papers: C. W. French
Donald G. Barton

February 15

Valentine Party
Gentlemen Entertaining
Clark Stevens, Chairman
L. P. Latimer
D. G. Barton
G. W. White

February 29

Alpha Xi Delta House

Thesis: Sadie M. Griffiths
Papers: Marguerite Pollard
Margaret Torrey
Dorothy Smith

March 14

Thompson Hall

Pre-Medical Night
Donald G. Barton, Chairman
C. W. French

SPRING TERM, 1928

April 4

Thompson Hall

Business Meeting
Committee for Nomination of New Officers
Margaret B. Torrey
Beulah Merrill
Katherine Flanagan
Thesis: Joseph Hanagan
Robert Smith

April 11

Thompson Hall

Business Meeting
Report of Nominating Committee
Election of New Officers
Thesis: Alfred Hebert

April 18

College Woods

Pledging

April 25

Council
Judge, Clark Stevens

May 2

Zero Degree
Donald G. Barton, Chairman
L. P. Latimer
Clark Stevens
C. O. Prickett
Anna Philbrook
Dorothy Fields

May 9

Initiation
Banquet: Margaret Torrey, Chairman
Beulah Merrill
Dorothy Fields
Equipment: Robert Garner
L. P. Latimer
G. W. White
Katherine Flanagan
Menu: Kelsea Griffin
Waiters: C. O. Prickett
Robert Garner

May 23

Thompson Hall

Installation of Officers
Thesis: Theodore Karabelas
John Mara
Meeting of Program Committee for 1928-1929

June 2

Field Day

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## Ode to Drosophila

(Maryland)

Drosophila, Drosophila,
Enshrined within thy lactic jar
What variations there are seen
Red, barred, ballon, and eosin!
What strange proportions in thee race
When non-disjunction takes place,
Yet from them many a formula
We learn to know, Drosophila.
Drosophila, Drosophila,
Thou dipterous philosopher!
Within thy macrochromosomes,
How many pangenes have their homes?
Thy spermic cell, O muscid elf,
Teach me the secrets of myself,
And Life's deep problems buried are,
Within thy cells, Drosophila.—*Phi 1927.*

## The Simple Arthropod

(Tune—Die Lorelei)

There was a simple arthropod
Upon the summer sea;
They caught him in a lobster pot
And brought him home to me.
I cut his little carapace
About his little gills,
And watched his unsuspecting heart
Beat soft, subconscious thrills.
I jerked his little walking legs
From out his body-wall,
Till of the simple arthropod
There was nothing left at all—
Nothing left but diagrams
Of what he ought to be
And there's an empty lobster pot
Upon the summer sea.—*Woods Hole*

# THE GRIST WE GRIND

References to articles published in other journals by members of PHI SIGMA.

*Goldsworthy, M. C.*—Attempts to cultivate the mosaic virus of tobacco. Phytopathology. Nov. 1926. (Mu)

——————Studies on the spot disease of cauliflower; a use of serum diagnosis. Phytopathology. Nov. 1926. (Mu)

——————Peach rust epidemic of 1926 (California). Calif. Countryman Oct. 1926. (Mu)

*Hansen, H. N.*—A simple method of obtaining single-spore cultures. Science, 1926. (Mu)

——————Pink-root of onions caused by *Phoma* sp., Science, 1926. (Mu)

*Plakidas, A. G.*—Strawberry "yellows", a degeneration disease of the strawberry. Phytopathology, 16:423-426. June, 1926. (Mu)

*Tryon, R.*—Inheritance of maze ability in rats. The unreliability of the significance of the difference between two populations. Jour. Comp. Psychology. Dec. 1926. (Mu)

*Grinnell, J.*—Geography and evolution in the pocket gopher. Univ. Calif. Chron. July, 1926. (Mu)

*Light, S. F.*—On *Hoplonympa natator* gen. nov., sp. nov., a nonxylophagous hypermastigote from the termite *Kalotermes simplicicornis* Banks characterized by biradial symmetry and a highly developed pellicle. Univ. Calif. Publ. Zool. 29, No. 5, 1926. (Mu)

——————On *Metadevescovina debilis* gen. nov., spec. nov., a xylophagous polymastigote from the termite, *Kalotermes hubbard* Banks. Univ. Calif. Publ. Zool. 29, No. 6, 1926. (Mu)

*Allen, Ena A.*—On the culture in vitro of *Councilmania lafleuri* and *Endamoeba coli.* Proc. Soc. Exper. Biol. and Med. 1926. (Mu)

——————Encystment of *Councilmania lafleuri,* Kofoid and Swezy, in culture in vitro. Univ. Calif. Publ. Zool. 1926. (Mu)

*Hall, E. R.*—Systematic notes on the subspecies of *Bassariscus astutus.* Descriptions of one new form from California. Univ. Calif. Publ. Zool. 30: 39-50. 1926. (Mu)

——————The muscular anatomy of three Mustelid mammals, *Mephritis, Spilogale,* and *Martes.* Univ. of Calif. Publ. Zool. 30 : 7-38. 1926. (Mu)

*Hinshaw, H. C.*—Morphology and mitosis of *Trichomonas buccalis* Kofoid. Univ. Calif. Publ. Zool. 29: 159-174. 1926. (Mu)

———————Correlation of protozoan infections of the human mouth with the extent of certain lesions in *Pyorrhea alveolaris*. Proc. Soc. Exp. Biol. and Med. in press. (Mu)

*Howard, Hildegarde*—A review of the fossil bird *Parapavo californicus* Miller from the pleistocene asphalt beds of Rancho La Brea. In Press. (Mu)

*Koch, Dorothy*—Cultivation of *Endamoeba dysenteriae*. The effect of variations of temperature and of drying upon *Endamoeba gingivalis* in vitro. In press. (Mu)

———————The effects of dyes, of dye mixtures, and of disinfectants upon *Endamoeba gingivalis* in vitro. In press. (Mu)

*Pickard, Edith A.*—The neuromotor system of *Boveria teredinidi*, a ciliate from the gills of *Teredo navalis*. In press. (Mu)

*Hoagland, D. R., A. R. Davis, and E. L. Hibbert*—Influence of light, temperature and other conditions on the ability of *Nitella* cells to concentrate halogens in the cell sap. Jour. Gen. Physiology. Sept. 1926. (Mu)

*Reed, C. I. and P. P. Reed*—Reflex association of feeding and defecation in young birds. Proc. Soc. for Exp. Biology and Medicine 22 : 245. 1925. (Alpha and Kappa)

*Reed, C. I.*—Intravascular use of heparin. Amer. Jour. of Physiol. 74: 79. 1925. (Alpha)

———————Effects of bilateral vagotomy on blood pressure. Ibid. 74:61. 1925. (Alpha)

———————Studies on the physiological action of light. (Alpha)

II. Depression of arterial blood pressure. Ibid 74:511. 1925

III. Effects on arterial blood pressure of direct irradiation in vivo. Ibid. 74:518. 1925.

IV. Effects on the blood of irradiation in vivo. Ibid. 74: 525. 1925

*Reed, C. I. and N. Kleitman*—Studies on the physiology of sleep. IV. The effect of sleep on respiration. Amer. Jour. of Physiol. 75:600. 1925. (Alpha)

——————— *and R. W. Tomson*—Heparin II. Investigation of possible antigenetic action. Proc. Soc. Exp. Biol. and Med. 23 : 656. 1926. (Alpha)

———————Heparin III. Effect on coagulation time when added to blood after clotting has begun. Amer. Jour. of Physiol. 77 : 568. 1926. (Alpha)

———————Old sun-worship finds vindication in modern laboratory. The Nation's Health. 8:535. 1926. (Alpha)

*Wilson, C. L.*—Illustrative material of gaps and traces in teaching plant anatomy. Torreya 25 : 39, 40. 1925. (Epsilon)

——————— Adventitious roots and shoots in an introduced weed. Bull. of the Torrey Bot. Club. 54 : 35-38. 1927. (Epsilon)

——————Medullary bundle in relation to primary vascular system in Chenopodiaceae and Amaranthaceae. Botanical Gazette 78 : 175-199. 1924. (Epsilon)

——————Lignification of mature phloem in herbaceous types. Am. Jour. of Bot. 9 : 239-244, 1922. (Epsilon)

*Grier, N. M.*—A preliminary report on the progress and encouragement of science instruction in American Colleges and universities 1912-22. School Sci. and Math. 26 : 753-64, 872-81, 931-40. 1926.

*Keefe, Anselm M.*—A new species of Aphanocapsa. Rhodora 29 : 39-41. 1927. (Zeta)

——————A preserving fluid for green plants. Science N. S. 64 : 331-332. 1926. (Zeta)

*Young, P. A.*—Transmission of potato witches broom to tomatoes and potatoes. Science 66 : 304-306. 1927. (Chi)

*Plunkett, O. A., P. A. Young, and Ruth W. Ryan*—A systematic presentation of new genera of fungi. Trans. Amer. Micro. Soc. 42 : 43-67. 1923. (Chi)

*Solheim, W. G., P. A. Young, and O. A. Plunkett*—A systematic presentation of new genera of fungi. II. Trans. Amer. Micro. Soc. 64 : 187-207. 1927. (Chi)

*Smith, Fanny Fern*—Self-fertilization in Nicotiana. Science N. S. 59 : 461. 1924. (Iota)

——————Pseudo-fertility in Nicotiana. Annals of the Mo. Bot. Gard. 13 : 141-172. 1926. (Iota)

——————Some cytological and physiological studies of mosaic diseases and leaf variegations. Annals of the Mo. Bot. Gard. 13 : 425-484. 1926. (Iota)

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Titles of Papers reported in progress of completion by members of PHI SIGMA.

University of Kansas KAPPA

A. BACTERIOLOGY

*Dr. N. P. Sherwood*—Study of allergic responses of the embryonic chicken heart.

*Dr. C. M. Downs*—Active anaphylaxis in turtles.

*Drs. Sherwood and Downs*—On the passive sensitization of turtles and guinea pigs using immune serum from chickens and rabbits.

*Dr. Sherwood, Dr. Stoland, and Kenneth Goodner*—Non-specific responses in bacterial anaphylaxis.

*Dr. Sherwood, Dr. Downs, and Paul Davis*—The pharmacological action of various drugs on the embryonic chicken heart.

*Mrs. Katherine Daily Gaston*—Immunological study of the so-called syphilitic antibody.

*Raymond Schwegler*—The effect of endermic and other biological reactions of Saponin.

*Frances Dunmire*—The phenomenon of indirect hemolysis of the blood cells of various vertebrates, with a possible application to Streptococcus.

*Lucy Heathman*—The immunological reaction of various amoeba.

*Mary Elmore*—The antigenic properties of Algae.

*Dr. E. L. Treece*—Cultural and metabolic studies of the Colon-Aerogenes group of Bacteria.

*Carsandra Ritter*—A comparison of two media used in bacteriological water analysis.

*Joel Wahlin*—Study of rennin enzymes.

*Herbert Gaston*—The hemolytic substance produced by Bacillus subtilis.

B. PHYSIOLOGY

*Dr. O. O. Stoland*—The physiology of the parathyroid and the effect of guanidine on the parasympathetic system.

*Drs. Stoland and Sherwood*—The relations of the parasympathetic nervous system to immunity reactions.

*Fred Isaacs*—The effect of guanidine compounds on the blood pressure of dogs and rabbits.

*Jacob Esau*—The calcium and phosphorous excretion following parathyroidectomy and following injection of liver extract.

*Lalia Walling and Dr. Stoland*—Nature of catalase—the effect of temperature, acids, alkalis, and salts on its activities.

C. BOTANY

*Dr. A. J. Mix*—Life history of the peach leaf curl fungus, *Exoascus deformans.*

*Joesphine Shaw*—Preparation of a key for the classification of eight species of the lilac, genus Syringa.

*Ina Bonney*—Comparative anatomy of the species of the genus Aesculus.

*Worthie H. Horr*—The reaction of plant tissues to foreign proteins. The question of anaphylaxis in plants.

*Helen Sumpter*—A comparison of the morphology of the two bittersweets, *Celastrus orbiculatus,* and *Celastrus scandens.*

*Willard Crozier*—Morphology of the Celastraceae.

D. ENTOMOLOGY

*Dr. H. B. Hungerford*—Taxonomic and distributional problems of the aquatic Hemiptera.

*H. O. Deay*—Classification of the Coreidae of Kansas. The morphology of the genitalia of the Coreidae.

*Dr. P. B. Lawson*—The taxonomy of the Cicadelladae.

*Kathleen Doering*—Classification of the family of spittle bugs, Cercopidae.

*Charles Martin*—Taxonomy of the genus Gelastocorus, the toad bugs, of the western hemisphere.

*Edward Breakey*—A systematic treatise of the family Fulgoridae, the plant hoppers.

*Raymond Beamer*—Biology of the Cicadidae, the cicada.

*Dr. P. A. Readio*—Reduviidae of North America, north of Mexico.

E. ZOOLOGY

*Dr. H. H. Lane*—The Niocene and Pliocene rhinoceroses of Kansas.

*Mary E. Larson*—Reaction to various laboratory media of Opalina, a protozoan parasite in the large intestine of the frog.

*Dr. A. A. Schaeffer*—Behavior of Amoeba. Spiral nature of the movements of various organisms, specially the Amoeba and the blind-folded human subject.

*Fred Allen*—The effect of temperature on the rate of movement of the amoeba *Mayorella conipes* and the question of rhythm in this rate.

*Oma Old*—The right and left turning and speed of movement of different flagellates.

*Bernice Peacock*—The effect of cell division on the wavy path of the amoeba *Mayorella bigemma.*

*Dr. Edward H. Taylor*—Monograph on the Mammalia of the Philippine Islands.

*W. J. Baumgartner*—The numbers and modifications of the chromosomes in the crickets.

*Jennie Macoubrie*—The form and variations in the pelvic girdle of mammals.

*Lena Feighner*—Inbreeding and hybrid vigor in two lines of *Drosophila melanogaster.*

*Wm. H. Burt*—The development and variation in the morphology of the tail among the various species of the Picidas, the woodpecker family.

*Leona Calutia*—The variations in the atlas and axis of mammals.

*George T. McNair*—The embryology of the deer mouse, *paromyscius maniculatus*

Comparative morphology of the genus Evenomous, burning bush, wahu, etc.

F. PSYCHOLOGY

*Dr. R. H. Wheeler*—The basic rhythms in motor learning.
The relation of images to peripheral stimulation, especially in the case of the blind.
Pattern reactions in the goldfish and in the albino rat.
The statistical determination of the relation of intelligence ratings of college freshmen to their performance in college subjects.

*Dr. Curt Rosenow*—Meaningful behavior in hypnosis, a theory of hypnosis based on observations on more than a hundred subjects at the University in the last four years.

*Dr. Harry Nelson*—Sight in the white rat.
The regeneration of the cutaneous nerve after division.
Vision in the human blind spot.

*Vida Ruth Watson*—Backward association in children.
Maze learning in the white rat.

*Dr. Beulah M. Morrison*—The effect on scores made in the seashore musical talent tests, of training in music and of practice in taking the tests.

*C. R. Garvey*—The question of the sensitivity of the blind spot to stimuli which ordinarily produce apparent motion.

*Stanley B. Lindley*—Pattern reactions in the parrot with special reference to vocal reactions.
Vaso-motor and respiratory rhythms in human motor learning.

*S. Howard Bartley*—Current patterns on the cerebrum of the dog.

G. BIOCHEMISTRY

*Dr. C. F. Nelson*—The therapeutic efficiency of compressed air in various chronic diseases.
The lactic acid content of the blood in Carcinoma.

*Ruth Stoker*—Gases in physical solution in blood and urine, with special reference to nitrogen content.

*Earl Lehnherr*—A new method for the determination of lactic acid in blood and urine.

H. PHARMACY

*Dr. C. M. Sterling*—The drug Tonga.

I. ANATOMY

*Dr. H. C. Tracy*—Correlation of the development of the nervous system with the development of behavior in fishes.

Biological survey of the marine waters around Mount Desert Island, Maine.
Monograph of the anatomy of the New England Ascidians.

*Joseph Goering*—Motor cell columns in the cervical cord of the rat.

*David Pankratz*—The nerve components of the muscle system in the head of the toad fish.

*Dr. H. B. Latimer*—The postnatal growth of the chicken skeleton. Correlations of the weight and length of the body, systems, and organs of the turkey hen.
The prenatal growth of the cat.

*Marcus Block*—The development of the pulmonary and aortic valves in 9, 12, and 16 mm. pigs.

*Engelbrekt Swenson*—The development of spontaneous movements and the nervous system in the embryo of the albino rat.

*Glenn Giffin*—The development of the musculature of the forelimb in the albino rat.

*Emil Lucas*—The development of the neural tube in the toad fish.

## H. PLANT PATHOLOGY

*M. C. Goldsworthy*—Bacterial gummosis of stone fruit trees. Peach rust control.
Sour sap diseases of stone fruit trees.

*H. N. Hansen*—Cause of "Pink-root" of onions.
Control of "Endosepsis" of figs.

*Jane R. Mackie*—Growing *Erysiphe graminis* on artificial culture media.

*A. G. Plakidas*—Investigations of the etiology, transmission, and control of strawberry "yellows."

*T. E. Rawlins*—Vegetable diseases.

*E. L. Reeves*—Studies of a disease affecting the palm, *Washingtonia filifera.*
Study of the control of snapdragon rust.

*H. E. Thomas*—The nature of the parasitism of *Armillaria mellea* and resistance exhibited by various hosts.
Relation of certain fruit tree diseases to soil troubles.

## I. ZOOLOGY

*Dr. H. C. Bryant*—Food habits of the Chinese starling, *Mynaj.*

*Joseph Dixon*—Fur bearing animals of California.
Birds and mammals of Mt. McKinley National Park.

*Dr. J. Grinnell*—Georgraphic distribution of mammals and birds along the Pacific coast of North America, and the significance of these distributional studies for binomics.

*Dr. S. F. Light*—Host-parasite studies on termites and their protozoa with a view to checking the phylogeny of each.

*Ena A. Allen*—Culture studies of some intestinal amoebas, particularly of the genus *Councilmania.*

*Edna M. Fischer*—Osteology of the mammals of the Emeryville shell mound.

*Helen M. Fitch*—Development of epiphysis in certain fishes.

*S. Gelfan*—Electrical conductivity of protoplasm, as measured by non-polarizable micro-electrodes.

*E. R. Hall*—Weasels of North and South America.

*H. C. Hinshaw*—Protozoa of the mouth in relation to Pyorrhea alveolaris.

*B. Henry*—Plant parasitic nematodes.

*Dora Henry*—Mitosis and budding in *Iodamoeba butschlii.*

*Hildegarde Howard*—Comparative Osteology of birds of Emeryville shell mound.
The eagles of Rancho La Brea, Pleistocene asphalt deposits.

*E. Lazier*—Ciliary mechanism of *Teredo navalis.*

*Edith A. Pickard*—The behavior of the neuromotor system of *Boveria teredinidi* during binary fission.

*Margaret Schell*—*Balantidium,* a ciliate parasite of the guinea pig.

*T. H. Shaw*—Life history and ecology of the California Jay.

*Helen Steinfeld*—Influence of certain environmental agencies on the length of life of *Drosophila melanogaster.*

*J. Linsdale*—(From Kappa Chapter) Comparative Osteology of the Fox-sparrows.

Univ. of North Dakota OMICRON

*Rheinhold Goehl*—Influence of perspiration on red counts and hemoglobin, and specific gravity of blood.

*Melvin Hetland*—Resistance of the human body to electricity.

*Jerome Syvertson*—Anatomy and histology of lymphatic organs.

*Dr. G. C. Wheeler*—Ant larva.

Emory University PI

*C. A. Belcher*—Cytology of Polytoma.

*W. B. Redmond*—Cytology of Datura.
Genetics of Chlamydomonas.

*Eugene Stead*—Feeding experiments on Peranema

*Lucille Caldwell*—Cytology of Phacus.

*Dr. R. C. Rhodes*—Multiple fission in Heteronema.

*Dr. W. B. Baker*—Encystment in Flagellates.
Life cycle of *Eudorina charkowiensis.*

*J. P. Turner*—Chromosome scycle of Euplotes.

Candidates for Doctors degrees and thesis title:

*C. H. Oathout*—Certain Factors Affecting the Growth and Storage of Soybeans.

*N. A. Pettinger*—Some Factors Affecting Vegetation and Reproduction in Crop Plants.

*H. K. Wilson*—Wheat, Soybean and Oat Germination Studies with Particular reference to Temperature Relationships.

*K. M. DeCoursey*—Bionomical Study of the Cluster Fly. *Pollenia puctis* Fat.

*G. E. King*—Glands of the Honey Bee.

*M. R. Smith*—Ants of Urbana.

*W. C. Croxton*—The Revegetation of Coal Stripped Lands.

Candidates for Master degree and thesis title:

*J. C. Frankenfeld*—Biology of the Flat Grain Beetle. *Laemophlaeus pusillus* Schoen.

*M. P. Catherwood*—Some of the Effects of Soil Type, Chemical Composition and Soil Treatment Upon the Exchangeable Calcium and Magnesium Content of Illinois Soils.

*L. E. Bamber*—Nematodes of *Esox lucius.*

*A. L. Hertel*—The Skull of Moxostoma.

*J. G. Mackin*—Some Nematodes from Oklahoma.

## University of Illinois RHO

*E. Y. Monsma*—A Nematode Parasite of *Chrysemys Marginata Marginata*

*J. M. Sanders*—Development of the Thyroid Glands in *Necturus maculousus*

*J. R. Savage*—Roadside Animal Communities and Their Seasonal Fluctuations.

*J. H. Swanson*—Some Studies on Rodent Cestodes.

*M. R. Isaacson*—Certain Factors Affecting Color in Soils.

*W. R. Tascher*—Diastatic Activity in Dent Corn Grain as a Cause of Early Vigor.

*A. F. Kuhlman*—A Study of Color in Milk, with Special Reference to Mode of Inheritance.

*K. E. Wright*—The Factors Influencing Autoxidation of Butter Fat.

*Louise Millhouse*—Distribution of Fat Solubles in Yellow Maize.

*Dorothy Moore*—Physiological Behavior of Glycerol Trimargrate.

*Grave V. Larson*—Factors Affecting the Utilization of Food Reserve in Colytedons.

*Charlotte Liebtag*—Eculogic Foliar Anatomy of Some Plants Common to Illinois and North Carolina.

*Vivian M. Pires*—Concerning the Morphology of Microstroma and the Taronomic Position of the Genus.

*J. T. Johnson*—The Morphology of the Pycnidium of Some Illinois Phyllostictas.

*S. W. Decker*—Catalase Activity and Dormancy of Gladiolus Corms.

### Duke University TAU

*Dr. George E. Avery*—(formerly of Zeta) Morphological studies on the developmental anatomy in some economic grasses.

*Dr. H. L. Blomquist*—The life history of *Deonaea muscipula*. The Hepaticae of North Carolina.

*R. W. Crosley*—Researches on the effect of Infra Red radiations on the acid-base equilibrium of the animal body.

*Dr. Bert Cunningham*—Facts and fallacies regarding two headed snakes. The effect of pressure on the rate of development of hen's eggs.

*Sophie A. Dehler*—The reactions of the eggs of salt marsh mosquitoes to different culture environments as compared with their natural habitat conditions.

*W. A. Ellison*—Investigations on the rate of nerve regeneration in the white rat.

*Dr. F. G. Hall*—The physiology of temperature regulation in animals. The physiological influences of Infra Red radiations.

*Harold M. Hefley*—Correlations between the environment of rodents and the ecological relationships of their parasites.

*F. J. Holl*—A comparison of the parasites of certain fluviatil animals in different drainage systems.

*Dr. D. L. Hopkins*—(formerly of Johns Hopkins) The rate of locomotion in amoebae as affected by different chemicals.

*W. A. Jenkins*—Cercospora as causing leaf spot of Cherry.
The completion of the life history of Cercospera causing leaf spot of cherry.

*Doris A. Matheny*—On the parasites of the Acrididae of North Carolina.

*Gladys Osborn*—The spermatoxin of guinea pigs, and the differential effects of equal temperatures produced by Infra-Red radiations and steam on the testis of the white rat.

*Dean W. Rumbold*—The periodicity of parasitism in certain turtles of North Carolina.

*Frederick A. Wolf*—The life history and morphology of *Cephaleuros mycoidea*, a parasitic green alga.
Studies on *Citrus melanose.*

### Miami University UPSILON

A. BOTANY

*Don B. Creager*—Xylariaceae of Ohio.

**Dr. Bruce Fink*—Lichens of the United States.

*Joyce Hedrick*—Hysteriales of Ohio.

*M. L. Lohman*—Iowa species of Lycoperdon.
Occurrences of Mycorhiza.

*F. Louise Sanford*—Cladoniaceae of Ohio.

B. GEOLOGY

*Mike Chappars*—Geology of northern Kentucky.

*P. H. Dunn*—Geology of north-central Kentucky.

*Dr. W. H. Shideler*—Cincinnatian Paleontological Stratigethy of the Cincinnatian Geological Province, and Ontario, Michigan, Illinois, and Iowa.

C. ZOOLOGY

*Fred Fletcher*—The inheritance of physical stamina.

*R. H. Hefner*—Metamorphosis of the smaller Myriopoda.

*Birely Landis*—Arachnid parasite of the *Drosophila melanogaster.*

*W. C. McNelly*—Identification and classification of land Mollusca of Oxford and vicinity.

*Dr. S. R. Williams*—Myriopoda of Ohio.

* Deceased 1927.

### Montana State College CHI

*James Bradbury*—Embryological development of certain characteristics of the genitalia of the ground squirrel (*Citellus Richardsonii*)

*Thomas Strand*—Life history of *Palmodes laeviventris* and its parasite (as yet undetermined).

*Edith Swingle*—Phylogenetic relationships among certain fungi.

*Ross Hutchins*—Ecological studies of the Noctuidae.

*Lawrence Young*—Embryological development of the tympanic bulli in *Perodopus Richardsonii.*

*Fred Morton*—Parasitization of the Spotted Fever tick (*Dermacentor Andersoni*) by *Ixodiphagus cancuitei.*

*William Jellison*—Downy mildew of sunflower caused by *Plasmopara Halstadii.*

University of Denver EPSILON

*)r. Thomas R. Garth*—

Mental Fatigue of Indians of Nomadic and Sedentary Tribes. Jour. of Applied Psychology, Dec. 1926 X, 4.

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January 1 to July 1, 1927

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